

# AMERICAN BEE JOURNAL

FEBRUARY, 1921



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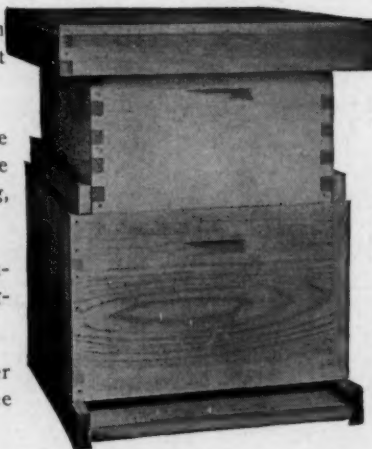
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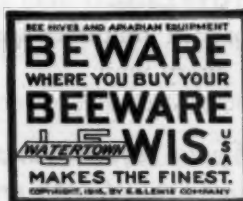
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VOL. LXI—NO. 2

HAMILTON, ILL., FEBRUARY, 1921

MONTHLY, \$1.50 A YEAR

## THE HONEY REGIONS OF INDIANA

BY EDWIN G. BALDWIN

The honey-producing possibilities of any State were judged, a quarter century ago, largely by its white clover, and no wonder. Then the main crops of the major portions of the United States, apiculturally, were gathered from the inconspicuous white clover. But few other honeys ever saw the larger marts of the country. That is speaking broadly, of course. It was probably for that reason Indiana has been much misunderstood as a honey State, certainly underestimated. For her white clover honey has not (nor probably ever can do so) placed her in the class with Iowa, Michigan, Wisconsin, Minnesota and New York; but albeit this is all true, few States can boast a more varied honey-flora than the Hoosier State. It is hoped that the following outline and map of the honey regions of Indiana may help to show just what the State has to offer to prospective beekeepers.

### Her Geology

The State lies well inside the limits of the limestone glaciation, and therefore, logically, she should afford excellent soil for the white clover, alike and sweet clovers. But later glaciers carried a lot of debris, in the form largely of clay, gravel and sand, down over the limestone deposits, burying the northern part of the State under a layer of surface soil not so favorable to the clovers. As a consequence, the soil cannot endure drought, and leaches badly, easily becomes acid and lacks the ideal elements and conditions for best clover development, and hence for best clover honey secretion. That is the main reason, no doubt, why Indiana does not make the same showing in honey from clover as does northern Iowa, for example, and northern Illinois. From a temperature standpoint, and from the point of view of rainfall, the northern part of the State

should be ideal for clover; it is the Miami soils that forbid this.

The limestone, that is one essential of the clovers, is buried too deeply for best sweetening effects on the crops grown there; in the northeastern part, for example, in Steuben and DeKalb counties, the limestone is 25 or 30 feet below the surface, while on the northwestern boundary, in Jasper and Benton counties, the terminal moraine shows the limestone close to the surface, huge boulders marking the edge of the later glaciations. As a result of the soil deposits, their nature and extent, the best region for the white clover is about a hundred miles south of the Michigan line. In the first two tiers of northern counties, the clovers are not to be relied on for surplus honey, and for the rea-

sons given. Moreover, the extreme northwestern part is given up to the Kankakee marsh, not primarily a clover soil.

### Region 2; the Best Clover

It is the lands along the Wabash river, from Cass county in the west, to Adams and Wells counties in the east, that form the region primarily a clover belt, the best, in fact, in the whole State. It extends from about the southern line of Pulaski county on the north, and as far southward as Tipton and Randolph counties, the latter on the Ohio line. It just also happens that this is the only region in which the basswood remains in a degree sufficient to make a showing worth while in the supers. Crops of 150 and 200 pounds are not unknown from a single colony in this region, and an average of 100 per colony is not uncommon. The average of the seasons for clover honey seems to be about as follows: One good season, one fair season, and then a poor season. (See map.) Sweet clover is on the increase in the region just named. So also is alsike.

### Region 3; Fair Clover

The area bounded by, say Tippecanoe on its northwest and by Randolph county, on the Ohio line; by about Fayette county on the southeast and by Parke county on the southwest, may be called the region of fairly good clovers. Indianapolis lies about central of this area. Here the lighter soils, the more southern latitude, and the lessened rainfall, as compared with the parts along the lake country, are, collectively, responsible for the lessened output of clover honey from this second region. White clover in this section is uncertain to a greater degree than in the region just north of it, and the level surface of the ground renders tilling easy and general; as a result, therefore, the extensive areas planted to the cereal crops have driven out much of the



E. G. Baldwin



white clover. It is interesting and encouraging to note, however, that the farmers of this area are sowing an increasingly large acreage in alsike clover every year, either alone or, more often, with the red clover, and for that reason the honey-flows are gaining in amount pretty steadily of late years. White clover alone in this region is not dependable. If the farmers of the section named ever get to sowing alsike clover for seed, as they are doing in western Ohio, for example, the beemen there will find they are located in one of the very best parts of Indiana. Along the eastern side of the region white sweet clover is decidedly increasing, both sown and as a volunteer, and the writer has bought considerable honey from beemen of that part, which has had more of sweet clover in it than

white clover, though sold primarily as a white clover honey.

#### Region 4; Best Sweet Clover Region

The east portion of the State is the part especially hopeful for honey from sweet clover, for in general, the soil is thin or gravelly and clayey in nature, broken in large portions, and often acid. This plant, with white clover about once in five years, makes about all that most of this section can count on for surplus honey, with the exception of a narrow strip near Wells county, where the good white clover belt overlays this region.

#### Region 5—Locust

While it is hardly fair to call locust a main source of surplus honey, it comes nearer to being that in southern Indiana than anywhere else in the United States. Locust (*Robinia pseudacacia*) in this part of Indi-

ana is so common that it is met with in the woods about as commonly as oaks further north, or beeches in middle Indiana. In fact, it is one of the most common trees there. If the locust-leaf Miner, a troublesome pest on the leaves of the tree in May and June, can be controlled or eradicated, the tree bids fair to be a source of considerable surplus honey to the best beekeepers. We say best, for only those can secure crops from a blossom that comes so early and lasts so short a time. The writer, at the State fair in Indianapolis, saw and tasted honey that was called locust honey, and which he is fully convinced was mainly from that source. Needless to say, colonies must be strong early to secure any surplus from locust. It so happens, too, that this very part of the State is the best apple and fruit section, and early strong colonies can get a start in the supers from that source.

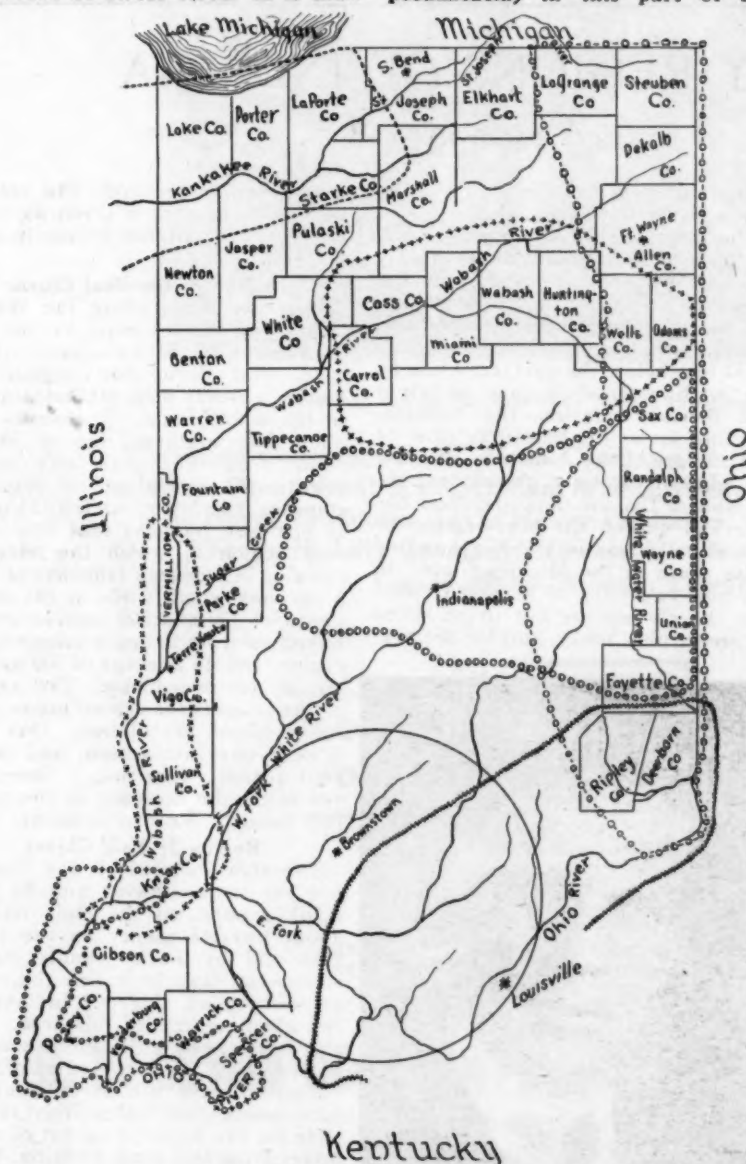
Red bud (*Cercis Canadensis*) is very common in this part of Indiana, and is an aid to good work in the brood-chambers and in the supers as well. In point of time, it is the precursor of fruit bloom, as the latter is of locust. The main sources of surplus honey in the section named must ever be from fall flowers. Goldenrod yields here and with asters and some Spanish needle often makes out a fair crop. Rarely white clover gives a lift, as it did in 1918.

#### Poorest Part of the State for Honey

The most unpromising part of Indiana for honey, and the one that offers least attractions to the commercial producer, is that marked with the circle in the accompanying map. It has a few beemen that by good management do secure sometimes a fair crop, but it is hilly, poor soil, rough and acid, and has little to recommend it apiculturally, for it is not the native habitat of any plant or tree that is extremely good in nectar secretion.

#### Region 6; Vining Milkweed

It is a truism, in Florida, that it is but "two whoops and a holler" from the best to the poorest honey regions of the State. The same is true, if one steps from the poor section just considered, to the extreme southwest of the State of Indiana. That is called by some, the very best honey region of any. It is the unique region of the vining milkweed (*Gonolobus laevis*), in the bottom lands of the lower White River, the lower Wabash, and about 60 miles of the Ohio River. (See map. See also, American Bee Journal, October, 1920). Not only is the vining milkweed, or blue-vine the main source of honey here, but the honey is delicious and exceedingly fine for table use, light colored and of a good body. It is almost a sure yield, is absolutely so if the weather remains dry during the blossoming period. One beeman in that region owns and operates over 600 colonies, another reports 175 pounds per colony, average, in five months, from this source, and much larger gains have been reported. The commercial



- Principal honey regions of Indiana
- Region 1—.....—Kankakee River marsh lands.
  - Region 2—xxxxxxx—Best white clover and basswood.
  - Region 3—oooooooo—Fair white clover, with alsike and sweet clover increasing.
  - Region 4—o-o-o-o-o—Best sweet clover.
  - Region 5—vvvvvvvv—Locust.
  - Region 6—xxxxxxxx—Climbing milkweed.
  - Region 7—x-x-x-x-x—Smartweed or heartsease.
  - Circle—Poorest region for commercial beekeeping.

importance of this limited section is increasing yearly. It does not extend much farther north than Knox county, nor farther east than Spencer county.

#### Region 7; Smartweed

Where the bluevine ends, however, the region of best yields from smartweed begins. That is to say, from Knox county northward to Vermillion county. In this limited area smartweed, following clover, makes a section for surplus honey not to be despised; in short, one of the very good ones in the entire State. If clover happens to be good, also, the yields may become astonishing, and all the honey is white and saleable, and sells as readily as pure clover honey. Smartweed may be considered the main source of surplus honey in Sullivan, Vigo and Vermillion counties. An average of 100 pounds per colony is not infrequently reported here.

From Vermillion county northward, to the Kankakee valley lands, in Fountain, Warren, Benton, Tippecanoe and White counties, the farming land is the best in all the State, but there is in all this section no distinctive source of surplus honey, none very dependable. White clover is but fair, having been almost eradicated by the high degree of tilling of the lands for farming; alsike clover is but scantily sown, and sweet clover has not yet gained much of a foothold. The fall flows are good only in limited areas. Goldenrod does not seem to yield much, if any, honey, and the bees are almost never seen working it. Smartweed does not count much except in very wet seasons. Some Spanish needle is found, but only local and scattering.

Just east of Warren county, beginning about Tippecanoe county, and extending for a narrow strip along the Wabash river northeast, the white sweet clover is about as good as anywhere in the State; for miles along the highways and railroads, interurban lines and in the waste lands generally, the sweet clover yield is the best in any county, save possibly the eastern strip of Indiana named above. It reaches into the region of best white clover.

#### Region 8; Kankakee Valley Marsh

It remains to consider the northwestern section as unique and distinct in honey-flora, as is the southwestern section. The valley lands of the Kankakee River are almost annually inundated where not well drained by the large irrigation and drainage ditches. Much of the surrounding land is marshy, and only partially reclaimed, and that, too, rather recently. Reclamation is still going on. In general the region includes large portions of Laporte, Starke, Lake, Newton and Jasper counties. Some of the best and best-known beekeepers of all the Hoosier State are located in this region, both in Indiana and also across the border in Illinois. Here white clover can not be counted on for surplus oftener than once in five years. The main flow is in fall, from buckwheat (the

one buckwheat region of Indiana), from Button-ball (*Cephalanthus occidentalis*), Spanish needle (*Bidens bipinnata*), milkweed (*Asclepias incarnata*), boneset or thornwort (*Eupatorium*), together with wild asters. All these make up a flow that is very dependable. When white clover happens to have its "innings," as it did two years ago, the yields secured are astonishing. In those cases, the conditions are much like northeast Ohio, where, though the main flow is from fall sources, the years when the clovers do make good give a double chance for surplus that makes the smile of the beemen one "that won't come off."

A glance at the accompanying regional map of Indiana may help to make plain the seven more or less overlapping areas here described.

The regions, while more or less distinctive, are not bounded by hard and fast lines, of course, except for the southwest and northwest portions of the State. The Kankakee region and the bluevine region could almost be outlined with a rope. Of these seven regions, four or five offer considerable inducements to commercial beekeeping, some of which are as good as are to be found in the central west. Specialists are to be found in almost every part of the State, and as the number of colonies is variously given from 150,000 to 250,000, the aphorism of Mr. Townsend is probably as true for Indiana as for the balance of the United States, viz:

"Nine-tenths of the honey of the markets is produced by one-tenth of the beekeepers."

Indiana has not a honey flora that will give big yields without good beekeeping methods, and the slogan is especially true for Hoosier beedom:

"Better keep bees better, or better not keep bees."

#### WILD THYME IN NEW YORK

We have received some interesting information in regard to wild thyme from J. B. Merwin, of Prattsville, N. Y. Mr. Merwin lives in a section where this plant has successfully established itself over several square miles of territory. He writes that he never fails to secure a good crop from that source each year, although in wet seasons it does not do so well. In 1914 the thyme was established over an area of about ten miles square, but the past summer he has found it growing 18 miles east and about the same distance north of his home.

The honey from thyme is very light amber in color, of good body and very good flavor. Customers like the flavor very much and once tried, the customer always wants the thyme honey again. Mr. Merwin states that although the quality is very good the bees do not winter on it quite as well as on clover honey. It begins to bloom about the 15th of July, just at the close of the basswood flow, and lasts until killed by frost, sometimes becoming into November. In 25 years it has never entirely failed, even when no honey was secured from anything

else. As high as 125 pounds per colony average has been secured from thyme in one season.

Thyme came originally from Europe, and is gradually spreading in the regions where it has become established. It is now reported from various localities from Nova Scotia to Southern New York, and also from North Carolina. In a few localities in Massachusetts it is a well-known source of honey, as it is also in southwestern Vermont. It occurs also in Connecticut, but we can find no record of any locality where it is sufficiently established to furnish honey in large quantity.

In Delaware County, New York, where Mr. Merwin lives, it is commonly called "summer savory" or "savory." This name is incorrect, as the savory is a different plant. Britton and Brown state that it has the following old English names: Brotherwort, hillwort, penny-mountain and shepherd's thyme.

Where it is well established the thyme covers the ground with a carpet and it furnishes a good forage for animals as well as bees, coming as it does in midsummer. Mr. Merwin states that there is no land too poor for it, nor winter too cold or summer too dry to prevent the plant from thriving in his region. In a very dry summer it has covered a gravelly hillside with a luxuriant growth. Many of the farmers keep cows which are grazed on thyme during the summer months. It is very persistent and hard to eradicate, once it gets established. Farmers who tried to get rid of it made but poor progress. One who tried to kill it out by plowing, only made a better seedbed for it and it grew more luxuriantly than ever.

#### TAKE AN INVENTORY

By E. S. Miller

Do not fail at the beginning of the year to take a complete inventory of all supplies, as well as all honey, wax, etc., if you are a business beekeeper. To get at the value of hives and other paraphernalia, ascertain from the catalogs the replacement value, or what it would cost new. Then deduct for depreciation. For example, if the average hive-body with good care will last fifty years, the depreciation will be 2 per cent for every year the hives have been in use. If a cover is good for 25 years, then 4 per cent should be deducted. If the life of a bottom-board is 20 years, deduct from replacement value 5 per cent for each year of use. Of course, the life of a hive, and consequently the rate of depreciation, will depend upon the care given. With outdoor wintering, depreciation is a much larger item than if colonies are wintered in a dry cellar. The difference between annual inventory values plus cash receipts, less cash expenditures, less cost of labor and other items such as rent, interest, etc., will enable one to figure net profits and cost of production. The commercial honey producer will, of course, have a more elaborate system of accounting.



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## THE EDITOR'S VIEWPOINT

### Death of Franz Richter

Our readers will recall that in April last, mention was made of help sent to the Austrian publishers of "Der Bienenvater" by the members of the National Convention of Buffalo. Franz Richter, to whom the food orders were forwarded, sent us a very hearty letter of thanks, saying that the people of Vienna were actually starving. As he did not ask for further help, we concluded that the year's crop was relieving them. But our friend, Mr. Aeppler, of Wisconsin, now informs us that he has just received a letter from Editor Alfonsus, of the above mentioned publication, announcing the death of Franz Richter, at 73, December 1, and that his death is directly traceable to the meager nourishment of the past few years, which lowered his vitality and caused his untimely death. Mr. Alfonso acknowledges the receipt of \$5 lately sent to him by Mr. Aeppler, saying that this has enabled his family to eat meat, for the first time in six months.

So people are still starving in Vienna, while we live in plenty! And this is the Twentieth Century! All as a result of the World War, so cheerfully declared by the late Francis Joseph and the self-admiring Kaiser!

### The Plagues of Beekeeping

Now what would you describe as the plagues of beekeeping? Movable-frame hives, honey extractors, comb-foundation, artificial swarming, practical queen-rearing, the use of smoke in opening hives, feeding sugar syrup, keeping down the drones, supplying built combs to avoid wax production, and generally everything which modern beekeeping has devised? That is the statement made in two pages of warning, condemning the "immoral" practices of progressive beekeeping, by a facetious writer in our contemporary magazine, L'Apiculteur, the oldest bee magazine extant. If it was written for a hoax, it is well gotten up. But the man appears to be in dead earnest. What next?

### Sell in Larger Quantity

Beekeepers often make the mistake of encouraging sales in too small quantity. It takes little more trouble

to secure the sale of a 10-pound pail of honey than a quart jar. If the beekeeper will put up his produce in 5 and 10-pound pails and 30 and 60-pound cans for the retail trade, and leave the small jars of a pound or less to the bottlers, he will profit thereby.

The article on marketing by Arthur C. Miller, in the December Journal hits the nail on the head. In my own experience in building up a trade for honey, I began by pushing the sale of small packages, and sold large numbers of quart jars. I also sold through the grocery trade a liberal amount of honey put up in jars holding about one pound. While these small packages sold readily, I later found that the ordinary producer can ill afford to devote the necessary time to bottling. Bottling is a business by itself and the extra cost is very large. The cost of labor, jars, labels, etc., together with a small profit to justify the trouble, makes the product sell at a very much higher price than is necessary in larger containers. The bottler is entitled to his extra profit and the beekeeper who puts up his product in such small packages should receive the extra price. However, by selling in larger containers the beekeeper moves his honey much faster, the customer uses more and everybody profits by the transaction.

As time passed and I became more experienced in selling the product of my hives, I was surprised to find that it was far easier to sell the same amount of honey in 10-pound pails than in the smaller packages. It is easy to sell one quart of honey by itself, but much harder to sell 1,000 pounds of honey in quart jars than to sell 100 10-pound pails. One customer living on a large ranch in the west bought seventeen 60-pound cans at one time. There were numerous customers living in adjoining States who bought their year's supply in 60-pound cans. City customers in Chicago and Des Moines took 30-pound cans, which were shipped by express.

The consumer usually buys in the kind of packages to which he has been accustomed, and the beekeeper in building up a trade can determine for himself the kind of packages in

which he will sell. If he offers something different the sales may be a little more difficult at first, but they soon become easier.—F. C. P.

### Adulterated Honey

The Chicago Evening American of December 18, carried a signed article by Brice Belden, M. D., which makes the charge that honey is very generally adulterated. We quote Dr. Belden as follows:

"Honey is one of the things most extensively adulterated, and it has become almost impossible to obtain pure honey in city markets. Glucose, flavored with a minimum amount of honey, is the substitute sold in this case."

This newspaper goes into the homes of many thousands of people who should be customers for the beekeepers' products. If the facts are as stated, it is high time for the beekeepers to take action to place their product in a pure state before the city consumers. If they are not as stated, then the American owes it to the beekeepers to place the information before its readers as prominently as it has given the information concerning adulteration. If pure honey is not to be had in Chicago, the beekeepers of America should know it as well as the people of Chicago. If an adulterated product is not generally offered there, such a statement will do untold harm to the beekeepers' market by making consumers afraid to buy, for fear of being imposed upon.

### Dr. Miller's Memorial

The mere mention of a campaign for a permanent memorial to Doctor Miller, will enthrall many of our readers, especially the older ones who have learned to love him, and dozens of whom have been aided by his timely and kindly advice. At the suggestion of Mr. E. R. Root, the editor of this journal, C. P. Dadant has been made chairman of a committee of five to formulate plan. The other four members of the committee are Dr. E. F. Phillips, of Washington, D. C.; E. R. Root, of Medina, Ohio; E. G. LeSturgeon, of San Antonio, and B. F. Kindig, of East Lansing, Mich.

The end in view will be to get the maximum number of subscribers to the fund, and anything from a dime up will show a fellow's heart is in the right place. The campaign will start soon and find its maximum point on or about June 10, which is Dr. Miller's ninetieth anniversary.

Likely we should await the committee's action before proceeding, but the "boss" is on a southeastern trip, hobnobbing with the beekeepers down there, and we're going to risk his displeasure by opening the campaign right here. Come on, beekeepers, I'm putting the first dollar in; who's going to match me?—M. G. D.



### Should Beekeepers Study Entomology?

The above question is asked by a practical honey producer of Tennessee, who has had but a common school education.

I am perhaps hardly fit to answer this question in a positive way, because my own knowledge of entomology, as a science, is very limited. Were it not for the entomologists who have preceded us, what would we know today about bees? We would still be groping concerning the mysteries of the beehive, wondering, perhaps, as our ancestors did, whether the king was really one and whether the setters (drones) did the hatching of the eggs.

Years ago, when I was a young man, I made some collections of insects. Then I read Packard's "Guide to the Study of Insects," or rather I read "at it." Later I procured Comstock's up-to-date work and scanned it, more as a reference work than as a textbook. The study of insects is immense, intricate, not only because of the millions of different insects, but also because of their various forms and their wondrous habits. Grown-up farmers, who are honey producers and did not get a college education, would waste their time trying to master the details of entomology. But they should learn to distinguish a hymenopter like the bee, the wasp, the hornet, from a coleopter, like the potato beetle, the lady bug, the June bug, or from a lepidopter, like our beemoth, or the little codling moth.

Of course, we need to read the writers on bees, most of whom give the entomological side, or natural history of the bee, in their works. Without some of these, we cannot call ourselves fully informed beekeepers. I read and re-read Reaumur, Schirach, Huber, Dzierzon, Langstroth, Barbo, Cheshire, Cowan, Phillips, Snodgrass. No one who reads these, or part of them, carefully, will fail to get a fairly intimate view of the bee's natural history.

When it comes to the general features of entomology, if we wish a study divested of almost all scientific terms and having to do mainly with observations upon the curious habits of insects, nothing equals Fabre's immortal descriptions, which have been translated and are sold in this country. Whether you read of the "praying mantis" that makes a meal of her husband during the honeymoon, or of the dung-beetle which lays its eggs in balls of dung and buries them deep in the ground, each description is as interesting as a novel and often much more wonderful.

I bought Fabre's "Souvenirs Entomologiques," 10 volumes, in his own language, and found them delightful reading. Perhaps more than anything else did I enjoy the narration which he made of "My school," in a backward village of southern France, in the first half of the 19th Century.

The school-room was at the same time kitchen, dining-room, bedroom, chicken-coop and pig-pen, for the pigs trotted around the scholars at the lunch hour, to gather the crumbs.

If it was possible for a man of talent to overcome such a handicap of his young days and become one of the greatest entomologists, why cannot anyone of our farmer beekeepers, with a common school education, acquire a smattering of this science, enough at least to give him a glimpse of the immense variety in the world of insects? Each of Fabre's works is worth reading.

We have, in this country also, some interesting writers on insects. Mr. Floyd Bralliar, of Madison, Tennessee, wrote a very charming, I might say fascinating, little work, "Knowing Insects Through Stories," intended for children, but very pleasing to the grown-ups.

Though the bee is one of the rare insects directly beneficial to man, many other insects are also beneficial to him in an indirect way, such as are predaceous and live upon injurious insects which would become a scourge without their beneficial interference.

Yes, study entomology, you will not regret it.

But why answer this question in the editorial columns? Would it not find its place better in the "Answer" department? No, because the question and answer department has only to do with the technical part of practical beekeeping, the bread-and-butter side of it. This has to do with the science of the business and deserves a more aristocratic place. Without the science of beekeeping, the practice would be poor.

### Iowa Short Course

Dr. E. D. Ball, Assistant Secretary of Agriculture at Washington, D. C., spoke at the Short Course at Ames. He is authority for the statement that wherever empty hives that had once contained foulbrood were sold, there foulbrood developed. He gave names and dates. If such is the case, we should carefully singe our empty hives when we transfer a foulbroody colony out of them. It does not cost much. If there is a doubt, better be on the side of safety.

Dr. Wallace Park, of Ames, gave a very interesting address on swarming. He quoted an old writer who stated that the beating of tin pans, to prevent the bees from flying away in swarming, was useful in keeping the bees from hearing the queen give her orders for departure. Others say that the beating of tin pans is to imitate the peals of thunder and make the bees think a storm is imminent.

Dr. Park states that there are scent glands at the extremity of the abdomen, which give off a strong odor and attract other bees of the same hive, when they are fanning their wings at the entrance of the hive. This, I believe, is after Sladen, who believes that it is not at all the "hum," but the scent of these glands that at-

tracts the other bees, when the swarm is hived. These glands are called "glands of Nassanoff," after the man who originally discovered them. Snodgrass mentions them on page 85 of his "Anatomy of the Honey Bee."

Dr. Wallace Park is making careful and thorough experiments upon the flight of the bees, the amount of honey which they may or may not carry, the number of flights of worker-bees per day, and similar subjects. From the data gathered, it would appear to us that bees are as varied as human beings in their aptitude and willingness to work, their activity, their speed and the amount of honey with which they are willing to load themselves. It would seem that there are those among them who prefer to play a good part of the time. Dr. Park is to continue his experiments, but he has promised to give us some facts, when the time comes.

For the first time, I heard at Ames that Adam Grimm, of Wisconsin, who has been dead many years, was the man who introduced foulbrood in the United States, by bringing colonies of bees from Europe. Was there no foulbrood in the United States? His importations were in 1867.

### Influence of Male and of Female on Offspring

Which has the most influence upon the offspring, the queen or the drone? I would like to see this answered by those who have cause to know. I am told by Mr. —, of Ventura, California, to get queens of Dadant, because they use large hives, large brood-chambers. This matter ought to be discussed, early, before May if possible.

Answer: We do not rear queens for sale, as it pays better to produce honey. Besides, our large hives do not make the queens prolific, but just give to the prolific queens a chance to display what they can do. The question of the influence of either sex was discussed at the International meeting of Paris, in 1900. I was present. The consensus of opinion was that the drones give the moral qualities, temper, activity, etc., while the queens furnish the physical qualities, endurance, prolificness, acuity of senses.

Can our readers enlighten us? Here is a good occasion to use Dr. Miller's byword: I don't know.

### Good Samaritan Fund

Funds are still coming for the victims of the war in France and Belgium. They are needed, and we should not forget the sufferers. We list:

Acknowledged in November	\$ 6.00
Miss Annette Ozanneau, Keokuk	1.00
Fresno Co. Beekeepers, California	5.00
Total of new list	\$12.00

### THE FUTURE EDUCATION OF THE BEEKEEPER

By H. F. Wilson

When Mr. Demuth remarked, at our Chautauqua last summer, that scientific application of any formula was just a common-sense use of it, I think he opened the way for all of our beekeepers to become scientific investigators. In fact, some of our best-known beekeepers of the past and present were and are investigators of the science of beekeeping. In beekeeping terms they are known as practical beekeepers, but these men have been successful, because they studied the bees and their actions under certain conditions and learned from these studies what was best to do and why certain things should not be done.

Many observations are made and recorded in the bee journals by our beekeepers that are scientific, but seldom do these observers attempt to reason out the direct application of their observations.

One of the finest methods of increasing the knowledge of beekeeping is through observations of the (scientific) practical beekeeper, who takes time to study the reasons for normal and abnormal conditions in the bee colony and is able to reason in a logical manner on the results.

Scientific investigations are nothing but careful observations of natural phenomena, which reach a greater degree of exactness with increased observations. Take, for instance, the temperature of the bee cellar. For a long time certain of our beekeepers have realized that near 50 degrees F. was the best temperature for the bee cellar. This conclusion was reached after a long series of observations of the condition of bees at different temperatures in the cellar. Lately this scientific fact has been proven by actual observation of the temperature requirements of the honeybee cluster during winter.

The real difference between the average beekeeper and a well-trained investigator is that the beekeeper has

not had the advantage of special training in chemistry, physics, zoology, and other subjects necessary for the study of the economy of the bee colony. While Dr. Miller is no longer able to defend himself, I do not think it any reflection on his wonderful career to say that his early education in medicine must have helped him greatly in studying the ways of bees. The words "practical" and "scientific" really have the same meaning as applied to beekeeping, and only scientific beekeepers can hope to keep in the game of the future. Hundreds of thousands of dollars are going to be invested in bees and thousands of colonies will be found where hundreds now exist.

The beekeeper of the future must be a trained man. Not only must he have training in the manipulation of bees, but he must have a knowledge of physics, chemistry, soils, botany, zoology, business methods, and other minor subjects.

Given unlimited time, a certain knowledge of these subjects may be obtained through reading or coming in contact with other men. But the world of today is moving too fast for such methods and we must learn quickly or be left by the wayside.

Where are we to go for this training? Like other agricultural subjects, it must be taught in our schools and colleges, where it will take the more technical name of "Bee Husbandry."

Bee husbandry is rapidly being included in the curriculum of all agricultural colleges, and in a few years this subject will be a recognized part of higher agriculture. At the Ontario Agricultural College, Guelph, Canada, a building has recently been completed which, I understand, is the first building erected exclusively for beekeeping in America. We should have many such buildings in the United States.

During the last few years, bee husbandry has become a recognized part of the curriculum of the College of Agriculture in the University of Wis-

consin and plans are under way to provide a laboratory, complete in every detail.

The following courses are now being offered to students who wish to take up this work:

1. A five-weeks' short course in beekeeping in connection with the regular fifteen-weeks' farmers short course. This course is primarily meant for farm boys who are doing general farming, but has been arranged so that practical beekeepers may receive special instruction in a course combined with poultry or horticulture. Given in 1921 from February 7 to March 17.

2. An elementary course for beginners covering one semester of eighteen weeks.

3. An advanced course for beginners extending over the second period of eighteen weeks of regular work. Students who have had work in apiaries are also allowed to enter this class.

4. A complete short course in beekeeping for all who cannot afford to remain for longer than one year. This course is intended to give the full year's practice and includes actual care of one apiary throughout the year. Four apiaries, two commercial and two experimental, are available for study at all times. Each student is also given a series of problems in management corresponding to the four seasons of the year.

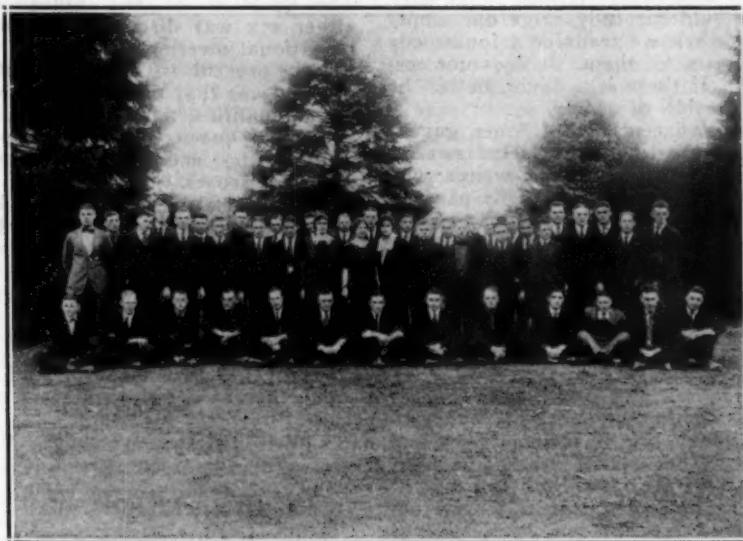
5. A four-year course in bee husbandry, which includes all fundamental studies, such as physics, chemistry, zoology, botany, business administration, etc. Each student must have spent two summers in a commercial apiary before graduation and must have carried on a certain series of experiments along the line of general beekeeping practice. He must also participate in marketing one crop of honey. It is expected that every student who finishes this course will be able to successfully engage in the business side of bee husbandry or take up college experimental work as he desires.

Wisconsin.

### DO BEES NEED SALT?

Some years ago I had a California cooler for milk and butter and other things; it had gunny sacks on sides all around and water on top, with small holes in side of tank, so the water trickled down over the sacks and kept them wet all the time. Bees were all over the sacks to get water, and so I put a lot of salt in the tank so the water would be very salty, and that increased the number of bees getting the salt water, so the cooler was entirely covered with bees. But the lady of the house objected to getting anything in and out of the cooler; so I had to give it up, and since have had nothing of the kind.

But now some California beekeepers in the Western Honey Bee say they soak combs that have been in foulbrood colonies in salt water, and use them again, and no foulbrood appears; salt may have something to do



1920 class in elementary beekeeping at Wisconsin University



with keeping bees healthy, and if so, why don't we have some practical way to give bees salt? We might have some big water bags like the automobile tourists use, filled with very salty water, and hang them in the apiary and let the bees help themselves. I wish some one would give us advice from a Government Experiment Station, as to whether bees really need salt.

Daniel Danielson.

Colorado.

### QUEEN-INTRODUCTION

#### Can It Be Made One Hundred Per Cent Successful?

By Allen Latham

Of all the trials to which beekeepers are subjected, few try the patience beyond the killing of a choice queen by some bolshevik bees. The subject of queen-introduction has, perhaps, been brought into the columns of the bee journals as often as any, and countless ways of introducing queens have been offered. Many of these suggested methods have their merits, but all have one common weakness—they all fail at times. Tom succeeds with one method while Dick fails with that but succeeds with another. Is there some one method which is fool-proof, which will work with all varieties of bees, and which will work under all conditions? Am I about to offer such a boon to the beekeeping world?

No; I cannot offer this boon, but I do think that I can offer a method which is simple and within the reach of all, and one which comes as near reaching the 100 per cent mark as we shall ever find unless we are willing to adopt a method which costs more than the death of an average queen. A breeding queen should never be subjected to any other method than that of letting her loose upon combs of hatching brood, kept warm by artificial heat, and from which all old bees are excluded. This is a 100 per cent method, but is too costly for the regular procedure.

The method I am about to explain will not work with colonies that are queenless. It can be used only with colonies which have a queen that is to be replaced by another. As at the present development of beekeeping a very large per cent of all queen introduction is requeening, this new method will prove usable in the vast majority of cases.

Proceed as follows: Find the old queen and cage her, with or without attendants. This cage need have no candy nor exit hole. It may be a piece of half-inch board  $1\frac{1}{2}$  inches square with an inch hole sunk in one side, over which hole is tacked a square of wire-cloth. Place this cage with that which contains the new queen side by side on the top-bars of the frames. So place them that they are wire down over a space between two frames. Also adjust them so that the candy-plugged exit of the cage containing the new queen is closed to

the bees of the colony by the other cage. Close the hive and leave it thus for forty-eight to sixty hours.

It is well to place several thicknesses of burlap or other loose material over the cages before putting on the cover. A cold night, or a hot, sunny day will, perhaps, ruin the caged queens. Right here let me ask: How many caged queens are probably lost every summer because only a thin cover is between the cage in which the queen is confined and the sunshine of a mid-summer day?

After the lapse of two or three days remove the cage containing the old queen. In ninety-nine cases out of one hundred the other cage will be found with no angry bees about it, and its inmates will be found well fed by the bees of the colony. Slightly loosen the cardboard over the candy, or punch a small hole in it. Frequently, in the case of weak colonies, the bees will not release the new queen for weeks, if they do not get a taste of the candy. I have even known them to propolize the cardboard entirely over, thus sealing the queen in for eternity unless the beekeeper intervenes. Now close the hive and let it be undisturbed for four or five days.

This method has several features of unusual value, some of which I will enumerate and enlarge upon.

Of prime importance is the fact that the colony is never dequeened. Not being dequeened, it does not acquire the frenzy which a dequeened colony is likely to acquire. Not acquiring that frenzy, it omits, usually, the results of that frenzy. In other words, it will not commonly construct queen-cells under the treatment which I have outlined. Of even more importance, it will not acquire the animosity against the new queen which it would have if the old queen were not present.

This last statement is most suggestive. I will not take space to go

into it further, but every student of bees will find it a very resourceful subject for study. I will barely mention that I have had colonies care for and feed upwards of ten queens for weeks at a time, each queen without any attendants and all cages without food. I once thought to winter surplus queens after such manner, but found that eventually all queens but one would be deserted as the rigors of winter set in.

Another very important fact develops from this absence of animosity towards the new queen. She is fed by the bees very soon, if not at once. Consequently queens thus introduced fare much better than those which have to subsist upon the candy in the cage. All the attendants of the new queen can be removed, and even the candy, and usually all will be well. I find, however, that sometimes a queen is allowed to starve, and for that reason I furnish the cage with a moist candy, if no escort bees are present, and the usual candy if the escorts are there. In most cases both escorts and queen are soon fed, and after several days the candy in the cage will be but slightly diminished. Hence, the new queen is in a plump condition by the time she is released, and gets to laying very promptly.

Another consequence of this plan of introducing queenbees is the absolute certainty that a colony need not remain queenless for more than a day or two. Why do I make this statement? I will tell you. The old queen is not killed. When I introduce queens by this plan and feel at all doubtful about the outcome, I put the old queen into a cage stocked with candy and escort bees at the time I remove her from beside the other queen. This cage is placed in the upper part of the hive, between the cushion and inner cover. Four days later, when I look into the hive to see if the new queen is O. K., if I find that through some defect the in-



Short course class in beekeeping, Wisconsin, 1920



roduction has been a failure, I simply put the old queen down where the bees can release her and let the colony go until I can try again.

That last paragraph suggests that this method has its failures. I will say that I simply take that precaution. I have never had to carry it to fulfillment more than two or three times. I think that in those two or three times failure was not due to the method, but was due to some defect in the queen. Do the best we can, some queens are weaklings, doomed to a short existence. In one of those few cases the queen was found dead in the cage, had probably been subjected to an injury when put into the cage, which injury eventually proved fatal, but was at first overlooked.

I have, in a great many cases, left the old queen over the top-bars and instead of removing her, shifted the cages so that the new queen could be released. In the majority of cases the new queen would be released and soon be laying, but in other cases they have turned up missing. Some queens are too nervous to bear the presence of another queen in the hive, and so conduct themselves that the bees cannot endure them. I am fully persuaded queens introduced by this method would be perfectly safe if they would behave themselves in a quiet manner and not go on a rampage. As I could not control this factor I adopted the plan of removing the old queen on the third day.

Another modification I have tried is as follows: Both cages are shoved into the entrance wire up. The third day, as before, the cage with the old queen is pulled out. Unfortunately, when this modification is tried there are many failures. I think this is due to the fact that the bees in the upper part of the hive are of a different age from those on the bottom-board.

One of the charming features of this method is that it works with Italians, blacks, Carniolans, hybrids, etc. I have succeeded repeatedly

with it with colonies of the most vicious hybrids.

There is one feature which I have not decided upon as to the merits. I said above that the old queen could be with or without escorts. I have not yet decided whether it is better to give her escorts or not. If my readers try this method of introduction next season, I hope that they will experiment along this line. I have practically always put the old queen back with no escorts, but it has occurred to me of late that if escorts were furnished, the colony might show even less uneasiness about its queen than when the queen has no escorts. Though the colony does not go into a frenzy, it does show that something is wrong.

Connecticut.

#### THE INDIAN BEE

Our readers who knew Leslie A. Kenoyer when he was engaged in a study of the problems of nectar secretion at the Iowa College of Agriculture, will be interested in the picture of the combs of the giant rock bee hanging from the underside of a projecting rock. This picture of the combs of *Apis dorsata* was taken by Mr. Kenoyer at Gwalior, India. Mr. Kenoyer is now connected with the Allahabad Agricultural Institute. We hope that he will find time to make a detailed study of the habits of the giant bee of India and give us further information concerning them.

#### OBITUARY

##### Noah D. West

Mr. Noah D. West, one of the quartet of New York bee inspectors, passed to the other side on November 9, 1920, in his 76th year, after several months of illness. He was a native of the town of Broom, Schoharie County, where he engaged in farming and beekeeping and occasionally taught in district schools. He experienced much success and later re-

moved to Middleburgh, where he enlarged his holdings of farm property, and largely increased his apiaries, which for some time consisted of several hundred colonies. He was a careful and conservative apiarist and produced large quantities of comb honey until recently, when, I believe, he produced mainly extracted.

Mr. West was on the State bee inspection force for nearly twenty years; he was faithful and interested in the work and of much assistance in our beekeepers' institutes and conventions; we shall sadly miss his counsel and the results of his ripe experience in our gatherings. Some years ago he invented the West spiral queen cage and queen-cell protector, which he once told me was suggested by the spring which is sometimes used in hanging bird cages; it was well adapted for its purpose, with its cartridge shell, feeder, tin cover, etc. He held patents for the United States and Canada on this device and manufactured and sold large quantities of them.

Mr. West resided in the village of Middleburgh for twenty years past and has been more or less connected with its activities since. He was a lifelong member of the M. E. Church, a member of its official board and active in its varied work.

He is survived by his wife and seven children by a former marriage. Wheeler D. Wright.

Altamont, N. Y.

#### A GROWL

By A. F. Bonney

In the current issue of Gleanings, Mr. Coverdale reports the honey crop out of the hands of the producers. This may apply to the eastern part of this State, Iowa, and the western half of Illinois, but will not for the west half of Iowa and the east half of Nebraska or the northwestern part of Missouri, where we had a very heavy white clover flow. Woodbury County, Iowa, produced one-and-a-half million pounds of honey, and, I am told, much of it is still unsold. Only two-fifths of my heavy crop is disposed of (December 15), and other beekeepers report a similar trouble.

I do not think there is anything to get excited about. The average demand for honey is increasing rapidly, and there is no reason why local State demand should not absorb every pound of honey produced, more particularly the comb. I have sold a considerable amount of comb honey here in shallow extracting frames, which average about 4 pounds each. I make a container by bending heavy millboard, such as packing boxes are made of, to cover sides and bottom of frame, wrap all in heavy paper and deliver. The cost is only the time. I got 35 cents a pound, gross weight. The great advantage is: I sold four pounds instead of one. Persistent advertising will sell even the granulated honey.

This is the first season I ever had honey on hand after November 15.



Combs of the Indian Rock Bee, *Apis dorsata*, hanging from underside of projecting rock at Gwalior.

The cause: People around here sold as low as 20 cents a pound, for both comb and extracted, and one man sold 5-pound pails, by express, charges prepaid, at \$1.40 each.

He that hath plenty of good Home Brew,

And giveth his neighbor none,  
Shan't have any of my Home Brew

When his Home Brew is gone.

O! won't it be joyful, joyful, joyful,  
O, won't it be joyful,

When his Home Brew is gone?

And won't it be joyful when the price cutters are out of honey, for then we shall get fair prices. In the meantime, the Producers' League shall have made a start, and conditions will gradually improve.

I, for one, am inclined to withdraw my help from the back-yard, barn-yard beekeeper, the one who has bees this year, none the next, who is the cause of the big half of the foulbrood in the country, who buys no books and reads no journals, joins no associations and dumps 50 to 5,000 pounds of honey on the market at less than wholesale. The man who wants to start in beekeeping, as a vocation or avocation I shall help all I can; I mean the man, wherever he is, who wants to keep bees, a few colonies or many, year after year.

Iowa.

### SPECIFIC GRAVITY OF HONEY

By F. Dundas Todd

The editor suggests that many readers would probably like to know what is meant by specific gravity, how it is measured, and what advantage it will be to a beekeeper to know the specific gravity of his honey.

This runs along the line of progress, for in these days of exact measurements the time is coming when big buyers of honey will pay for it on the basis of its sugar content as definitely ascertained, not as guessed at in the present system, whereby a jar is tilted and honey is roughly classified as thick or thin according as the air-cell rises slowly or quickly. Some years ago, when a big baking concern bought honey by the carload, their chemist stated that all honey bought by the firm was tested for sugar content and paid for accordingly. It was the same in the recent "wet" period, all alcoholic beverages were tested for alcoholic content, and the amount of that was the basis on which price was calculated. The amount of water present was not considered at all, but flavor was an important factor, just as it is in honey, cheese and many other foods.

In the United States Pharmacopoeia, the authoritative book for all druggists in the United States, honey is defined as having a minimum specific gravity of 1.37, while the Canadian minimum legal standard is 75 per cent solids, or a specific gravity of 1.3790. For export abroad, as I pointed out in the American Bee Journal of May, 1920, the New Zealand Government honey graders re-

fuse all honey with a specific gravity of less than 1.420, which is about 82 per cent solids. New Zealand honey as sold abroad has 10 per cent more sugar content than honey of the minimum legal standard on the North American continent, and ought to be worth just that much more money. I have judged many hundreds of samples of honey at exhibitions, and found them range from 75 to 84.6 per cent solids, a difference of almost 13 per cent between the two extremes, yet all producers expected to sell their honey at the same price, when as a matter of actual value the best was worth 3c a pound more than the poorest at prevailing wholesale prices. When the facts were plainly stated to the beekeeper who had produced the thick honey he at once saw the point, and used the data as a selling argument with so much effect that he got two cents a pound more for his crop than he had previously been asking, no small item on a total output of 6,000 pounds, being an actual gain of \$180.

The specific gravity of a substance is simply the ratio of its weight to that of the same bulk of water. For instance, a cubic foot of water weighs 1,000 ounces, a cubic foot of brass 8,000 ounces—that is, it is eight times heavier than water, therefore its specific gravity is 8. A cubic foot of alcohol weighs 790 ounces, milk 1,030 ounces, glycerin 1,260 ounces, hence their specific gravities are .790, 1.03 and 1.260 respectively. It is merely the old story of adopting some one thing as a standard by which to measure a certain quality of everything else. We simply cannot measure a thing by itself, the noteworthy example of this absurdity is when we try to measure all minds by one, that is our own mind. If we could only devise some means of

measuring a mind by something else we would unhappily realize the fulfillment of Burns' prayer:

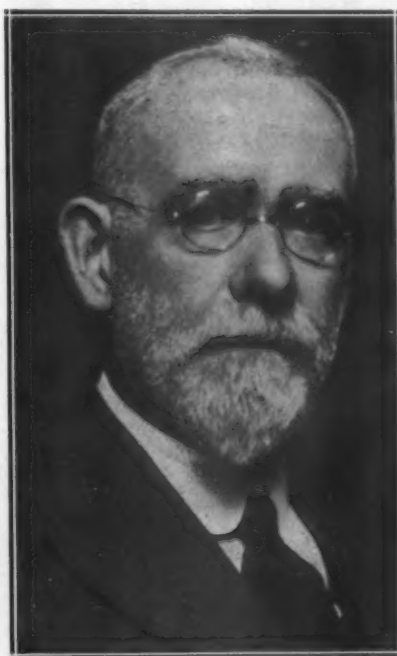
"O wad some Power the giftie gie us  
To see ourself as ithers see us!"

But it looks as if for all time we will be in the ridiculous position of being able to define insanity, but not sanity, that is: the negative condition but not the positive.

To weigh a cubic foot of any one thing would be quite a task, for the first problem would be to get a block of the substance exactly one cubic foot in bulk, an almost impossible undertaking. So in practice, as far as fluids are concerned, a rather simple method has been devised based on the fact that in the case of an object lighter than water, one that will float, the amount of water it displaces will be exactly of the same weight as the object. For example, if we take a block of oak one inch square and 14 inches long, that is of 14 cubic inches capacity, and dip it in a vessel containing water, we find it will sink to a certain depth, displacing some water, and raising the water level until the weight of water displaced is exactly equal to that of the wood it buoys up. Now if we guide the wood to a perfectly upright position, we will find that it will sink to about 10 inches in the water, and has therefore displaced 10 cubic inches of the fluid. Therefore we find that 10 cubic inches of water are equal in weight to 14 cubic inches of oak. The latter then is, cubic inch by cubic inch, or cubic foot by cubic foot, just ten-fourteenths of the weight of water, or expressed in the regular form of a decimal fraction, 10 divided by 14 is equal to .714, the specific gravity of oak.

Our oak stick can now be used as a measuring rod for a great many other liquids. For instance, we may have a strong solution of salt in water, brine in fact, so we dip our oak stick in it and find it will sink only 9 inches. So 9 cubic inches of brine equal the weight of the stick, but so did 10 cubic inches of pure water, hence 9 cubic inches of brine and 10 inches of pure are equal in weight to each other. We might say that brine is 10-9ths, or 1 and 1-9th times the weight of pure water; that is, its specific gravity is 1.11. We could try the same experiment on honey, say a sample of well ripened honey such as is guaranteed by the New Zealand honey graders, and we would find that our oak stick would sink only 7 inches. Therefore 7 cubic inches of such honey would be equal in weight to 10 cubic inches of pure water, consequently the honey would be 13-7 times the weight of water, or, expressing it in proper form, the specific gravity of the honey would be 1.42.

Our block of wood, is really a meter or measure, and as it is mostly used in water solutions, it is called a hydrometer. It has, however, a few drawbacks. In the first place it is rather bulky, necessitating a very large quantity of fluid to float it,



F. Dundas Todd



then it has a rather nasty habit of trying to flop over. So the scientific world has devised something very much more convenient in the form of a glass tube containing some mercury or small shot in a bulb at the bottom of the stem so as to make it float vertically in any liquid. The depth to which the instrument sinks indicates the specific gravity of the liquid, which is recorded on the stem. We saw that our stick sank deepest in pure water and less in water containing common salt, so in graduating all hydrometers, zero is at the top.

Now we all know by practical experience it is utterly impossible to make a measuring rule that can be used with equal facility for determining the thickness of the smallest screw in a watch and the diameter of one of our British Columbia cedars, one of which I know to be 13 feet in diameter, 10 feet above the ground. There is quite a long range between pure alcohol with a specific gravity of 0.79 and the honey of my beekeeper friend with a specific gravity of 1.443, so the usual plan is to devise a hydrometer for the special work in hand, where much has to be done, as for instance, determining the amount of alcohol in various brands of liquors in Government bonded warehouses.

Broadly speaking, there are two groups of hydrometers, one to use in solutions lighter than pure water, such as alcoholic beverages, oils, ammonia, etc., the other for solutions heavier than water, such as blood, milk, brine and honey. It is with hydrometers of the second group we, as beekeepers, are concerned.

When hydrometers were first devised the natural thing to do was to make the scale with equal divisions, and the Baume scale in use on the continent of Europe is so graduated. Experience ultimately showed that the relationship was more complex, so Twaddle devised a scale in which the divisions are not at equal distances apart, but closer together at the bottom, thus compensating the instrument. Users of a Baume scale necessarily have to refer to tables to

learn what specific gravity is indicated by the observed figures, whereas users of the Twaddle scale simply multiply the reading by 5, place a decimal point in front of the answer, then place 1 for the specific gravity of water in front of the decimal point. Either scale is good, so long as one knows what one is doing.

Between the legal minimum of 1.37 and that of 1.443, the densest honey I have yet seen, the range on the Twaddle hydrometer would be from 76 to 88, or 12 degrees. The reading on a Baume would be from 41 to 85. In an ordinary hydrometer, such as is used in chemistry classes of high schools and by photographers, the graduation is generally from 0 to 80 on the Twaddle system, and therefore is not available for testing honey. Even if it were, the readings would be a little vague, as the 12 degrees essential would fall within the compass of 3-8 of an inch, much too close for fairly accurate reading. However, we can buy hydrometers that are adapted for a short range of work. For instance, a Twaddle number 4 is available for readings from 72 to 100, and on such an instrument the range of 12 degrees essential for honey occupies a space of 1 3/4 inches, enabling an ordinary individual to do fairly accurate work. This instrument is about a foot in length and is used in a test tube 10 inches long and 1 1/2 inches in diameter. The one I bought in Vancouver for \$1 I find was made by the Taylor Optical Co., of Rochester, N. Y.; the test tube, which, by the way, has a wide, solid glass base, cost 90 cents. Twelve ounces of honey load it very nicely.

As we all learned at school, the bulk of a liquid varies with its temperature, and honey is no exception. It expands with increase of temperature, consequently a cubic inch at 90 degrees will contain less honey and weigh less than when the temperature is 60 degrees. The hydrometer will therefore sink deeper and read lower with honey at 90 degrees than at 60 degrees. Just to see for myself what the variation amounted to, I arranged for a test the samples

of my honey I mentioned in my previous article as having a specific gravity of 1.418 when tested by Mr. Dawson. So I loaded the test tube, inserted the Twaddle and let it sink, then slipped in a small thermometer, the kind sold by the Eastman Kodak Co. for about 35 cents. I found the temperature to be 52 degrees, and after half an hour's waiting, the Twaddle reading was 85.

The honey was far too thick for a fair test. We were having a little cold spell at that time, so I put a board above the furnace, placing on it the test tube with contents. Two days of this kind of thing gave me quite a variety of temperature. I found a fairly constant reading of 84.5 with temperature from 54 to 66, then 83.5 at 74, 82.5 at 86. Hence, if possible, read at about 60 degrees, and add 1 for each 10 degrees higher. So my own reading of my honey is 1.422, as against Mr. Dawson's 1.418, which is not too bad for a novice using an ordinary thermometer.

Next I took a sample of last year's honey, getting a reading of 85, with temperatures varying from 58 to 64, indicating a specific gravity of 1.425.

I am glad I spent \$1.90 for this simple outfit. I have always tried to raise good honey, but never before knew in cold figures just exactly how it compared in sugar content, which is the one really measurable quality of honey, with that of good honey producers. Color, flavor and aroma are intangible, especially flavor and aroma. If year by year the Twaddle shows a reading of 84 or higher, with a temperature of 60 degrees, I will feel I have some reason to respect both my honey and myself.

British Columbia.

## RUSSIAN BEEKEEPING

By William Slovig

According to my promise, I send you photos of Russian apiaries.

We took them on our excursion at Parvaia Rietchka near Vladivostok, that we made for the special design of study.

No. 1. The apiary of Mr. Alexeiev. In the middle there is a trunk-hive, or "duplanka," as the Russians call it. The Koreans living in the neighborhood of Vladivostok excavate such trunks, daub the outside and inside of their entrance with honey and place them anywhere in the woods or field, where swarms are flying.

No. 2 shows the apiary of Colonel Smolensky, who now gets his living from the busy bees.

No. 3. Colonel Smolensky shows us one of his colonies. (First person left is myself.)

Though I wasn't fortunate enough to leave for home on board of the "President Grant," I hope to do so next month. According to the treaty of peace appertaining to that territory of Hungarian Banat, which was given to Rumania, I have to return to Rumania, whence I shall go back to Hungary to continue my studies in mining science at the academy



Russian prisoners of war at apiary of Mr. Alexeiev near Vladivostok



which I frequented three years before the war broke out. That time of my sojourning in Hungary I will also devote to the translation and publishing of the "Hive and Honeybee."

Meantime I shall send you any photos concerning beekeeping which I may be fortunate enough to get.

Rumania.

### THE FLYING TIME OF A BEE

By S. H. Sabine

While out driving on a country road a short time ago I had the interesting experience of following a bee for nearly half a mile, and under such circumstances as to enable me to time its flight.

I was driving at perhaps 20 miles an hour, when I discovered her flying just ahead of me and to the right of the road. I slowed down the car so as to keep her in sight, and at the same time noted the speedometer, which showed a speed of 17 miles. She was flying parallel with the road against a slight breeze and in as straight a line as if following a beaten path. The only variation which I noted was that she darted up and down occasionally, sometimes flying ten or twelve feet above the ground and again settling down to about five or six, although the field along the roadside was level and there were no obstructions in her path.

I concluded the reason for the up and down flight was that the wind, being against her, carried her up like a kite, and then she would gradually settle to her former level.

I lost her at a turn in the road, as I had to follow the man-made highway, while she was following the invisible highway which, no doubt, led to some distant source of nectar supply.

On page 351 of the October number, following your answer to the question "Why do bees cluster before flying to their new home?" you ask for suggestions.

It has occurred to me that perhaps one reason may be that the old queen, not having been outside the hive for a considerable period of

time, is not in any condition to take an extended flight, and stops at the nearest resting place to recuperate for a breathing spell.

This may be compared to a man who has been confined to his bed for a time and going out for his first walk. He would probably stop at the first street corner and lean against the fence for a few minutes' rest before going on.

This, however, does not seem to be the only reason, as a swarm with a clipped queen will cluster when the queen is not with them.

Dallas, Texas.

### THE NATIVE CHINESE BEE

By C. G. Golding

In "Beekeeping," by Dr. E. F. Phillips—MacMillan Rural Science Series—the author writes, anent "Races of Bees," on page 203:

"Chinese-Japanese. These bees are placed by von Buttel-Reepen as sub-varieties of indica. The Chinese bee has a heavy coat of long, dirty, grey hair; the Japanese bee lacks this."

Never having seen one, I am unable to contradict the von Buttel-Reepen description of the native Japanese honeybee, but I can state that this description of the Chinese honeybee is

incorrect. Von Buttel-Reepen must have had the common Chinese wild bee in mind; this insect appears about the end of March, or beginning of April, and dies out by the end of May. During its brief lifetime, it appears to devote its attention almost exclusively to the broad bean (*Vicia faba*). The Chinese wild bee, which is a trifle larger than the native honeybee, and very thick in build, is covered entirely with a heavy coat of long, dirty grey hair. It does not, to my knowledge, live in colonies. In habits, it resembles the common bumblebee, which occurs throughout China. It would be interesting to learn when von Buttel-Reepen visited China, how long he was in the country altogether, and what province he visited.

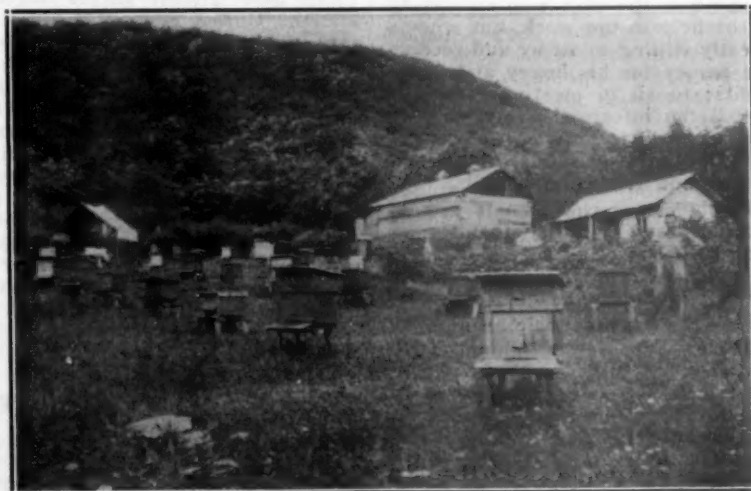
Now for a short description of the Chinese honeybee:

In common with all honeybees, the abdomen consists of six rings. The top is marked with four bands, the first is a broad one and the remaining three are narrow. The bands on the average worker are dull yellow in color; those on young, or nurse bees are lighter yellow. The belly is yellowish brown. The head, thorax and legs are very dark brown; the top of thorax is thinly covered with a short yellowish-brown down, which is thicker on the sides and underneath. The queens are dark colored, and the drones are black. So much for markings. Now for traits:

The Chinese honeybee is, I opine, the gentlest of its kind in the world, and I never use smoke when handling a hive, neither do I wear gloves nor a veil. I often stand in front of a hive when examining the frames, and have never been stung when in this position. Not that the Chinese honeybee never stings; it can, and does sting like fury on occasion. A hive, however, can generally be opened between 9 a. m. and 5 p. m. without fear; but after 5 p. m. the bees almost invariably sting directly they alight on one. Chinese honeybees are good workers, never enter the wrong hive (except, of course,



Colonel Smolensky opening a hive. Wm. Slovig at extreme left.



Apiary, honey house and winter shelter of Colonel Smolensky, near Vladivostok.

when robbing), remain very quiet when being handled, cap their cells white, and winter well out of doors. Winter losses do occur, but I think this is the fault of defective hives. In any case, the percentage of such losses is not high—less than 5 per cent—for the Chinese honeybee is a very hardy creature. In regard to propolis, they certainly cannot be accused of using this lavishly. Burr and brace-combs do occur occasionally, but a knife soon remedies these defects. In regard to swarms, not every hive casts one. Eight of my colonies, although filled with bees, have not cast a single swarm within the past two years. Some hives cast one or two prime swarms a year, the first in spring, which as likely as not is followed in a few days by an after-swarm, if queen-cells are not cut out, and the second in Autumn (end of August or early in September), but I believe it is rare for an after-swarm to follow the prime swarm in autumn, even if queen-cells are not cut out. The average number of queen-cells found in a hive after the issue of a prime swarm is three. I have on one or two occasions seen four. I believe it is unusual to find more than four cells in a hive after a swarm has issued, although in one instance, in my apiary, when a virgin was lost on her wedding flight, the bees started six queen-cells. These, however, did not mature, for I gave the colony a ripe queen from another hive, and directly the virgin emerged she promptly tore down all six cells. The Chinese queen, however, is not all that can be desired in the matter of egg production. The rearing of brood is curtailed, sometimes entirely stopped, in a dearth of nectar. What age does a Chinese queen attain? Well, this is a question I cannot answer, but I have noticed a number of instances the queens were superseded after the working year. One thing must be said of Chinese honeybees: they keep their hives clean. The average colony defends its hive well, against both robbers and wax-moths, but a weak colony quickly goes under.

### SELFISHNESS IN AMERICAN HONEY PRODUCERS' LEAGUE

By W. E. Joor

Unfortunately, selfishness is not confined to the League, neither is it absent from among beekeepers. As a rule, I believe all **real** beekeepers are gentlemanly in heart, but in addition to beekeepers there are honey producers and keepers of bees who are out **only** for the coin there is in it; and they, as a rule, lose much that they might have, because they are not beekeepers. There is also much selfishness and petty jealousy in State and County Associations, and wherever such exist, they are a severe handicap to the organization.

I have known prominent honey producers who would not join or work with any association. They would not give any information they might possess to fellow beekeepers,

nor to beginners, because they feared both as competitors. For them "the quality of mercy is strained."

I wonder how many of us would be keeping bees if we did not have the teachings of such men as Langstroth, Quinby, Miller, Alexander, and the Dadants? These men all made discoveries and inventions or worked out methods and freely gave them to others. Shall we not "pass it on?"

In "Scientific Queen Rearing," Doolittle says: "All that I have done has been done with the hope that I might be of benefit to the world, benefiting some one by smoothing over the rough places a little the same as some of the writers of the past have smoothed the way before my tender feet, when they were still youthful in the pursuit of apiculture."

"As I have freely received of the good things in the bee literature of the past, so I as freely give of the little I know, that I may, in a measure, pay the large debt I owe to those who have preceded me in the way of our delightful pursuit."

The very being of our country rests on the sacrifice of the individual for the benefit of the many, and the benefit of the one through prosperity of the many, "E Pluribus unum." This is the day of co-operation. The United States is a co-operative concern, both as between States, and between individuals and other units.

We must have sectional (State or otherwise) co-operative organizations and these should combine into a national concern, the American Honey Producers' League. If any special interests or sets of men try to exploit it for their benefit, it will be a failure. The interests that must work unselfishly in the League are the manufacturers, the honey dealers, the journalists, the educators and also the producers themselves. Any of these classes, by attempting to dominate or by striving to exclude the other, will cause injury.

There is another form of selfishness that can cause serious injury to the project. This is well expressed in the slang phrase, "Let George do it." Such is the man who refuses to join, or help in the work, but who is perfectly willing to sit by and receive more money for his honey and other benefits; to sit in meetings and absorb all the information he can, but never gives any himself; to use the inventions and methods of others, but does not help others at all.

The objects of the League are so broad that when it is functioning normally every beekeeper will be benefited. Some of these are:

1. The standardization of equipment or the reduction of the number of different types of equipment to be manufactured, and also carried by the dealers. There are several types of comb-honey supers and as a rule these are not suitable to use as extracting supers. If we use sections (as I suppose we always will), we could use a section that could be used in the standard extracting super with

"T" tins (a la Dr. Miller) and thus have a super that could be used for shallow extracting frames.

2. The standardization of race markings for bees. There is no accepted standard at present.

3. The definition of what is meant by a pound of bees; a one, two or three-frame nucleus; a full colony.

4. The influence to secure just freight rates; uniformity in regulations regarding disease control; shipping bees and queens; power to contest unjust laws.

5. Universal advertising campaign; assist beekeepers in buying supplies and in selling their products.

6. The promotion of broader education in apiculture, and research along lines of general interest to beekeepers.

Sectionalism and sectional selfishness must be held down and all actions taken in a broad spirit for the best interests of the beekeeping industry of the whole country.

But a reasonable selfishness, if such a term is permissible, is absolutely necessary to make the League a success. Does that sound paradoxical? Well, it's so. Man, the average human, is, in a sense, inherently selfish. How can that trait be made useful in the working of the League?

By making the League an organization of service to the individuals of its member associations and the allied traders, this selfish trait can be made especially useful. The trouble with the old National was that it was too altruistic and theoretical (without teeth, as some would have the League of Nations) and of no practical use to its members. The result was that no one received any direct, definite benefit, and where no definite benefit was visible the beekeepers refused to part with their money, and gave the National very little thought, and less support. Also it was too expensive for individual members from all the States to gather at a single meeting place, and the meetings were almost the only benefits.

In the League plan, representatives of member associations, chosen by those associations, gather together, like the United States Congress, and transact such business as may be timely. These representatives should and will, if they carry out the constitutional objects and policies of the organization, set machinery in motion that will be of direct aid to individual beekeepers; thus making the human selfish trait a means of drawing support. Care must be exercised that these benefits be for all individuals, whether producer, manufacturer or dealer. It must be an association for the industry at large and not for special interests or sections.

Texas.

### SOURCES OF KANSAS HONEY

By A. V. Small

South central Kansas is very different from the white clover region. Alfalfa is the main source of honey with considerable sweet clover in



some localities. There is considerable sweet clover seed raised here. As a source of surplus it is rather uncertain, as the dry weather very often sets in before the plant has a chance to bloom. Last year I secured some of the white annual sweet clover seed and found that under our conditions it cannot make a successful growth. I have received from the American Bee Journal a package of the white biennial, which ought to do exceptionally well in this locality. Last year I planted half a bushel of unhulled yellow biennial along the roads and have engaged a bushel to plant next spring. The soil is rich in lime.

For several years I kept bees in Topeka, within a quarter of a mile of a large alfalfa field. It was very exceptional for bees to work alfalfa at Topeka, and I did not list it as a honey plant. Coming out here where it is the main source of nectar, I was very curious to know just what made the difference and at just what place between here and Topeka was the dividing line. After a careful study of conditions and careful weather charts and after running for hundreds of miles up and down the streams, I find that in this part of Kansas alfalfa above 1,000 feet elevation is one of the main honey plants, and below that level it is one of the minor plants. It yields practically nothing at somewhere between 800 and 900 feet. It is surprising how sharp the line is drawn.

Alfalfa is a clover, and while it thrives under conditions where white clover cannot grow, the nectar secretion responds to heat and moisture very much as does white clover, after the bloom is once out.

Another rather interesting thing that I find is that the smart-weed of this locality is an entirely different variety from what we have at Topeka and at St. Joseph Mo., and the honey is very different.

Augusta, Kans.

### WINTERING

By A. E. Hale

I winter on summer stands, each in a separate case. Use a bottom-board two inches longer than the hive body, with the seven-eighths inch space under the frames summer and winter.

About November 1 I prepare for winter by nailing a metal entrance guard to the front of hive, leaving an opening 5-16x6 inches as a protection from mice.

I make the guards of light galvanized iron, cut 2 inches wide and 14 1-2 inches long bent over 3-8 inches at top so as to make it double where nailed to hive. Use the escape boards on top with cleat side down, thus leaving five-eighths or three-quarters of an inch over top of frames. Tack a piece of wire screen over the hole in the escape-board and cover with a piece of burlap. The cases are made of seven-eighths inch stuff for the frame, covered with 1½ ply roofing paper, tacked to frame with bill posters' tacks. Use 36-inch

paper cut in two, 18 inches wide. The inside measurement of the bottom of the frame is one-fourth inch larger than the hive-body and slips down to its place without moving the hive and rests on the 2-inch projection of the bottom-board in front and on a cleat one-half inch thick, nailed on back end, projecting about three-eighths inch above bottom-board, and covering joint between bottom-board and hive-body and preventing the hive from slipping back when raised in front to examine or clean out. The side pieces of frame cover joint on sides. As the end pieces are nailed on top of the sides of bottom of frame the paper projects seven-eighths inch below ends, closing the entrance to wind and snow except a piece about 4 inches long, which is cut on sides and turned upward for an outside entrance. There is a space of 2 inches on sides and ends of hive-body and 8 inches on top which is packed with leaves; and when taken off in the spring we save the leaves for future use. The packing is left on until settled weather in May. The rims of the covers are 3 or 4 inches wide to telescope over the top. The top of the cover is made of thin stuff, covered with roofing paper. The paper costs me about 30 cents per case. For the frame and top I use old crating and boxes. If bought new the lumber would cost 30 to 40 cents each.

Iowa.

### Wintering

At the meeting of the Des Moines County beekeepers at Burlington, Iowa, October 20, Mr. Wm. Judd, of Danville, Ill., who succeeds wonderfully in wintering bees safely, gave his method. He packs his bees very heavily in clover shaff, with about 8 to 10 inches of packing. Instead of wintering the colonies in one story, he places two stories and divides the comb half and half, 5 in each story, with the balance of the hive packed, behind division-boards. This has the advantage of supplying the bees with a large amount of stores above the cluster, so that they do not need to move sideways in cold weather. He packs only two hives in one winter case and leaves them on the same spot all summer. In this way he avoids the "drifting" of bees, which is always to be feared when moving them together at the approach of winter. The attendance at the Burlington meeting was small, but the beekeepers present were very much interested and well pleased.

### Length of the Sting

The British Bee Journal quotes the following from "Punch":

"The length of a bee's sting is only one thirty-second of an inch." We are grateful for this information, because when we are being stung we are always too busy to measure it for ourselves.

## BEEKEEPERS BY THE WAY

### A Man From Tennessee

Prof. G. M. Bentley, of the University of Tennessee, is a worthwhile chap, no matter which way you approach him. He gives one the impression that Tennessee is the garden spot of the world, and you can't much blame him for that, even though you believe that Indiana—or Texas, is better. Judging from the picture, Bentley is a thorough-going horticultural inspector, at least a judge of good melons.

He takes beekeeping seriously and is making it an important subject in his branch of the University. Last year he had a class of 67 returned soldiers in his beekeeping classes. It is as Secretary of the Section of Apiculture of the Association of Economic Entomologists that Bentley gets in his best licks for the industry. Many of the members of this organization are officially responsible for the enforcement of foulbrood laws as well as for teaching and extension work in beekeeping. Since Bentley has been Secretary, the apicultural section has been looking up decidedly. The programs are confined to such problems as are likely to face the members in their official capacity and must come under one of the three heads of research, education or inspection.

When you see Bentley just tell him you are a beekeeper and he will be glad to see you, but he will probably invite you to move to Tennessee.



A Tennessee booster.



### TREES FOR HONEY

By Elias Fox

In the December issue, "Best Trees for Shade and Honey," by accident or otherwise, the box elder is omitted. It is one of the very best from the beekeeper's standpoint. It is a fast-growing tree, with spreading branches and dense foliage, providing a quick and beautiful shade. Since it is a species of maple it can be tapped in early spring and will provide a liberal flow of sap, which can be boiled down to a delicious syrup, or even to sugar. It requires an expert to detect it from maple sugar or syrup.

The tree blooms profusely and yields as much pollen and nectar as the maples. Sometimes a liberal supply of honeydew is secured from the foliage. Pollen, nectar, honeydew and sap provide really four crops in the season. Blooming early, it furnishes very material aid to the bees for brood-rearing, thus providing a field force to gather the surplus crop later in the season.

### A SERIOUS MIS-STATEMENT

L. A. Schott, a Missouri reader, sends us the following clipping, which is reported as coming from the Journal of Agriculture, published at St. Louis:

#### Honey From Grapes

"In the vicinity of Jefferson City, Mo., during the past season, beekeepers obtained a much larger yield of honey than usual, but did not know from whence the surplus came, as the supply of nectar-bearing plants was not in excess of former years, until owners of Concord grape vineyards went out to gather their fruit and discovered that most of their grapes were not as plump and juicy as they should have been and they were at loss to account for it until they kept a watch and noticed that bees swarmed into the vineyards and settled on the grapes.

"Beekeepers also soon discovered that they were getting more honey than usual. The result was that grape owners had but little left with which to make jams, jellies and grape juice, while the beekeepers had not only a surplus of honey, but will in future be able to profit by the ex-

perience and obtain an additional nectar supply for their bees by the cultivation of grapes as a sideline of their business.

"When the fact is considered that the value of the increased production of honey from the grape juice far exceeds the reduced value of the grapes, it will be seen that grape raising in connection with beekeeping cannot fail to be very profitable."

The Journal of Agriculture should refer articles similar to the above quotation to some practical man before allowing them to appear. Grape juice has never made anything but wine, and has at all times caused disease and winter losses among bees. We know this by experience. Damaged grapes are originally injured by birds, or cracked open by wet weather, and when the bees come and get the remnants, the juice is usually already fermented and causes them to die, often before they can reach the hive. We have had hundreds of colonies of bees and 12 acres of vineyard at the same time. The season of 1879 was the hardest we ever saw on bees and grapes, and we positively know that there is no profit for bees in feeding from the damaged grapes. The shape of their mandibles prevents them from puncturing whole berries.

### THE BOX ELDER BUG HEARS

In regard to "How Butterflies Hear" on page 377, No. 10, 1910 issue. Late last summer I noticed box elder bugs clustered in knots on the bottom of the trees, so shouted at them one day, and, to my astonishment, they scattered.

Several days ago I captured one in the house and made a sharp sound at him, and he jumped. So I deprived him of his antennae and repeated the sounds, at which he would not move. Another thing that must go to prove the antennae contain the organs of hearing is that the bee and box elder bug generally live in clusters, and the butterflies, spiders and moths do not live in clusters.

The reason it cannot be proven that the bee hears is because it is not as cowardly as the box elder bug.

M. Earl Townsend.

Nebraska.

### WINTER JOBS

By Arthur C. Miller

For the fortunate few who can toast their shins before the crackling wood fire, let me suggest a few things worth doing. They may scoff now, but when hot summer comes they will wish they had listened and heeded. Get ready to make more money next year, or, in other words, to save labor, trouble and stings, to be able to do more in the hours at your command or to do all you have to do and time left over to loll in the hammock and enjoy that fine smoke—from your bee smoker, of course.

It is surprising the amount of lost effort which is due to out-of-order hives and other apparatus and to appliances which do not match or fit. Let me tell you specifically some of the things to look for and correct.

First, overhaul your smokers, clean out accumulated creosote and soot, renew the bellows leather if cracked, or moisten and soften with water if it is hard and stiff, and while it is soft and damp, rub in a liberal dose of neatsfoot oil, mutton tallow, or any good oil or grease. The smokers are the most important tools the beekeeper has, and the inspectors find many more poor and ineffective ones than good ones. If you need new smokers, order them at once and get good big ones, the little ones are only toys, and like the Yankee's razors, are good just to sell at a low price.

Next buy, or have made, several good hive tools, enough so you can keep several in each yard. One fully realizes what a useful article a good hive tool is when one has lost it.

Another essential is a good bee-veil, and one made of wire cloth is the most satisfactory in the long run. One something like the Alexander veil is good, but is much better if a hat forms the top, then it does not slip about on the head. Better have the wire cloth wide before the face and narrow at the back of the head, then if you tip your head up to gaze into a tree top the hat does not push down over your eyes like an extinguisher. And be sure and have the cloth "skirt" below the wire amply long, so it will tuck in under the vest or coat securely, or fasten with a tape, as your fancy dictates. Keep one or more veils in each yard. Better more than one.

Go over all the empty hives, supers, honey-boards, escape-boards, etc., renailing where necessary, and in the "naughty corners," put screws. While going over these things cast aside for kindling all odd-sized things. "A waste," you say. Not nearly as much waste as the time lost in busy moments of summer, trying to adjust misfits and plug up leaky corners and edges.

When all hives, etc., are repaired, scrape out all propolis. Enough of it accumulates in one season without carrying over any from the last. The delay in handling bees due to a mass of propolis is scarcely appreciated



Apiary of Frank Desart, of Lincoln, Ill., in double-walled hives. He reports good wintering with little trouble in these hives.

till one handles hives free from it.

All this wooden ware costs good money and new will cost more, so conserve it by painting it well. To be sure, some of the good men of the craft have long advocated no paint, but in those palmy days hives did not cost much and the lumber was good. Wonder if those people do not now wish that they had kept those fine hives well painted.

When going over the hives for repairs, stack the combs where you can get at them readily and, while the paint is drying, look critically at every comb; discard every one with many drone-cells, or stretched cells, or warped, or buckled places. Scrape all the propolis from the frames just to facilitate handling next season as well as to ensure accurate spacing. Combs with only small patches of drone-cells can be repaired. Cut out such places, taking out a rectangular piece, scrape from the base a row or two of cells about the opening thus made, lay in a piece of foundation and with a brushful of melted wax make it fast. Such repaired combs are not as fine as new combs built from fresh foundation, but they are valuable when built combs are needed.

When discarding whole combs, cut them from the frames, wire and all, and re-wire with No. 26 wire, stretching it tight; then put in the new foundation, embedding the wires carefully, preferably with an electric imbedder. No matter how carefully you adjust the wedges at the top, it is worth while to run a little melted wax along the tip, because it prevents an occasional slip, and the bees fasten the top sooner than they otherwise would.

After all the foregoing is done, go at the new goods, which by that time should have arrived. It will be found profitable to dip in linseed oil all bodies, supers, honey-boards and escape-boards, allowing the excess of oil to drain off. This is quicker than a priming coat of paint, and far better.

There is one other small item worth mentioning: Attend to gummed-up bee-escapes. Drop them into a boiling solution of strong lye with a liberal dose of powdered soap. Why the soap? Well, it helps separate the gum from the metal and makes a cleaner and slicker job.

Much of the foregoing sounds like "old stuff," I know, but if one may judge by the mess one finds in so many yards, it will stand a lot of repeating. Winter time is a slack time and does not yield much cash, but it can be turned into cash via time and labor saved in operation during the rush season.

Providence, R. I.

#### THE DADANT SYSTEM OF WINTERING BEES

By A. E. Burdick

I have just finished reading the new manual: "The Dadant System of Beekeeping."

With a few exceptional hives all

my beekeeping experience has been with Langstroth hives; however, I use, both summer and winter, two brood-chambers, 16 or 20 frames, and think of the two combined as a hive.

I am in thorough accord with the principles involved in the large brood-chamber, as exemplified in the Dadant hive.

For a number of years I have entertained the belief that the brood compartment of a hive should be large enough to hold a reserve stock of honey, or residual honey, a credit balance that would never be needed except in the unusual or extremely bad season. Due to the fact that the bees' cluster is nearly spherical, my imagination pictured this hive as nearly cubical.

Hives have been constructed in conformity with standard lumber dimensions, rather than in conformity with the natural requirements of the bees. The lumber dealer and not the bee student decides the depth of our brood and surplus frames. The pattern has been made to fit the cloth, with little or no consideration for the physical well-being of the wearer, and with this clothing and equipment the bees have demonstrated a marvelous adaptability.

I was particularly impressed with the conclusions reached in "The Dadant System" regarding the wintering of bees, based as they are on long years of patient experiment, and they have my fullest indorsement.

With no desire to be pedantic, I believe there are three essentials that must be understood and observed in order to avoid severe winter loss in this climate:

1. Quality and quantity of food for winter stores.
2. Quality of the air, or ventilation.
3. Protection from the elements.

Putting bees in packing cases does not appeal to me, especially those cases that provide a thick layer of sawdust on all sides of the hive. It is based on the erroneous idea that they will provide a steady warmth.

They are in reality a small ice box, the cold gets into them very slowly and it is, if anything, slower in getting out. In other words, when the cold gets in, it has come to stay, like an unwelcome mother-in-law, and, as pointed out in the little volume, the bees are likely to miss the only opportunity for a cleansing flight; with no opportunity to smooth out their bed and rearrange their stores, disease, disaster and death are at hand.

Assuming that these packing cases do not become refrigerators, and are in reality little hot-houses, then another equally vicious horn to the dilemma is presented. We have brood-rearing out of season.

A few winters ago, a beekeeper with 40 or 50 colonies, living in a neighboring city, packed all his hives individually after the ice-box plan. Over half of them died outright before spring, and those that survived were weak. Just over his fence a neighbor had one lone colony of bees, provided with a makeshift flat cover which had blown off early in the winter, leaving a gunny sack as the only protection above the cluster. This cover stayed off all winter, and the beekeeper said, in relating the circumstances to me, that they were a strong, vigorous colony in the spring. If the alternative confronted me of leaving my bees with only a gunny sack cover, or placing them in boxes well lined with sawdust, I would unhesitatingly choose the gunny sack.

Under the erroneous idea that cold is the worst enemy of bees, sealed covers have been provided and the bees literally exist in their own effluvia and, like a strong constitution that sometimes combats ill-advised drugs and a blighting disease and overcome both, so the bees often survive pernicious but well-intentioned measures provided for their welfare. These packing-box and tight-cover fellows, with no knowledge of biology, will stigmatize the rest of us by saying that we neglect and do not provide for the comfort of our bees.



H. P. Hinds, of Wabash, Nebraska, has found his fifty colonies so profitable that he expects to increase to 150 next season.



We have observed that bees by preference store their honey over and above the brood-nest. We take advantage of this fact and place empty drawn comb at that place. To the same extent that nature abhors a vacuum, so the bees abhor empty comb at that place, and strive to fill it with all their splendid energy; but if possessed with reason, they would see the futility of trying to fill a hole that was continually being prepared for them by the apiarist, and continually emptied.

We grope about without success to find attributes in the bees that correspond with memory, reason or volition in ourselves, and try to satisfy ourselves by saying that all the various phenomena of the hive are purely reflex, excited by various stimuli, all mere verbiage to obscure the poverty of our minds.

"And as imagination bodies forth  
The forms of things unknown, the  
poet's pen

Turns them to shapes and gives to  
airy nothing

A local habitation and a name."

—Midsummer Night's Dream.

Washington.

We do not believe that the packing case should be condemned as positively as our esteemed correspondent does in the above article. Between the ice-box which gets cold and stays cold, and the hot-house packing case, there is a middle line; a packing case which simply conserves the warmth of the bees and is heavy enough to keep the bees comfortable. Sawdust, to our mind, will never do, as it is indeed a refrigerator packing in very cold seasons. But many of the packing cases now used preserve the heat of the cluster without furnishing undue warmth. That we do not use them ourselves, because of their cost, should not deter beginners from trying them. Wintering bees is, more than any other part of the management, a question of locality.—Editor.

## HONEY AS A SALES PROMOTER

By Smith C. McGregor

Many apiaries that yield a generous supply of honey are not the sole business of their owners. Perhaps garden truck or poultry furnishes the balance of the income. In such cases, the honey is often disposed of without due consideration of its value as a sales builder for the other products.

If you are a part-time beekeeper, you may think you haven't time to devote to honey selling campaigns. If you want to market it to better advantage, and seek methods of time-saving in the care of the bees, why not try time-saving devices?

Time can be saved in dozens of places in the apiary, and the ones who do save it are usually those who make a success of their honey sales. Does the actual sale of honey end the transaction? If it does, you are missing one of the chief benefits of the apiary.

Most business men feature one line

or article that they have explicit confidence in. The profit on the actual sale of the featured article may not be worth the trouble involved; but the other articles sold, because of this first sale, bring in the profit. It is much the same with honey. If you have confidence in your product, why not let people know about it, calling their attention to anything else you wish to sell at the same time?

Perhaps you have sold your honey without difficulty; yet other farm products wasted because you could not find buyers. At the same time, many of your honey customers would have purchased the products you lost, had they known you had them. Market your honey in a special container, thus making it an attractive advance agent for your other products.

Take the 5-pound pail, for example. This is a convenient size for the small family, or for those who are buying for the first time. A good, attractive label on it reading, "This Honey is Only One of Our Products. If You Like It, Ask for Them," would let the buyers know you sold additional produce, and an advertising tag on the pail would list the seasonable bargains you offered.

Quality advertising labels and tags cost more than those of inferior quality; but if the honey is good, doesn't it deserve a good label? Indeed, people are getting so they judge a product by its advertising, and if they are pleased with the original purchase they will give preference to your line when they make additional ones.

It is as a trade promoter that honey brings its real profit; the 5-pound pail will not add much to your bank account, but if it lands the farm produce trade of the family who bought it, that is worth the time involved. Housewives are not bashful about telling about bargains, and honey is a good subject for gossip, especially if it is high grade enough to please the critical.

Do not expect the honey sales to provide an immediate outlet for all your other produce, for they cannot bring this about at once. But if you have confidence in your products, and wish to build up a permanent trade, it will be worth your while to give more attention to the marketing of the honey. If you are not in direct touch with a town or city, the parcel post system makes it possible for you to try it from your home. You can save the consumer money, and the increased sale of your other products will make it worth your while.

New York.

## MOVING BEES

Reading about moving bees in the December number of the American Bee Journal, I thought I would tell you of my experience this fall. I moved 56 colonies of bees in two wagon loads, with covers nailed down tight and wire screen nailed over the entrance. The bees were moved nine miles over rough roads, but came

through fine, had their flight and are now in the cellar. Had springs on the wagon to take up the jar.

Thos. Dildine.

Minnesota.

(While bees can be moved in this way in cool weather, they would smother in hot weather without more ventilation.—Editor.)

## COREOPSIS AS A SOURCE OF HONEY

By Charles B. Shortlidge, M. D.

Along the Delaware river, on its islands and in the swamps adjacent thereto, grow two flowers of the same order, *Compositae* annuals.

People call them the yellow flower and coreopsis. They are called coreopsis because the seeds resemble a bed-bug, and coreopsis is Greek for bed-bug. (*Coris*, bed-bug; *opsis*, appearance.—Editor.)

They belong to the same family as Spanish needle, but the seeds do not stick to the clothing like the former and are easily brushed off.

I give the true botanical names:

*Bidens trichosperma*, much divided leaf; also sometimes commonly called the tickseed sunflower. This plant grows in bush form about 5 feet high. I grew a specimen in my yard in a shady location, 8 feet high. This is the main honey plant blooming from August 20 to the middle of September.

*Bidens laevis*, nearly entire leaf, base of which grows around the stem of stalk from which it grows and narrow. Also is commonly called showy hue marigold. It grows about 2 feet high and starts to bloom about the last of August. It requires a damper location than the first named variety and is not so wide spread.

In Delaware county and adjacent sections of Philadelphia county, near the river, for a mile inland, there are several hundred acres of more or less swampy land, where the tall variety is very plentiful.

I was informed by good authority that these plants are found along the Mississippi river and in Florida.

For the past six years I have moved from 30 to 100 colonies of bees 14 miles to catch the flow. Three different beekeepers of Lancaster county moved 18, 30 and 100 hives from 40 to 59 miles to do the same, and others shorter distances.

I have averaged 20 pounds of extracted honey per colony and 25 pounds left for the bees to winter on. A complete failure of the flow has never been known by beekeepers living there.

The honey is the color of melted butter, light yellow, and has the characteristic faintly spicy odor or flavor of the blooming flowers.

I am scattering the seeds in swamps near by and hope some day I will not have to move my bees, but have flowers enough near home.

Last season I had my bees on Tinicum Island, in sight of the great Hog Island shipyard.

Pennsylvania.



## THE EDITOR'S ANSWERS

Questions are answered in order received. As we receive more questions than we can answer in space available, two or three months sometimes elapse before answers appear.

### Wintering in Southern California— Cross Bees

1. Should I, in this climate (Southern California), take off the supers? Would it do any harm to leave them on over winter?

2. Would it not be better to contract hive entrances during cold weather, and about how many inches should be open?

3. I have one colony quite hostile, but lots of honey. CALIFORNIA.

Answers.—1. Having never practiced keeping in Southern California, I should say, like Dr. Miller: "I don't know." However, since a reply is expected, I will suggest that, if the supers are removed, put into a moth-proof building and fumigated, the colonies will be better off without them, until the opening of the crop. Besides, if any of those colonies should happen to become weak, there would be much more danger of the moths damaging the combs on such a hive than in a good honey house. So the answer would probably depend upon the accommodations at hand.

2. It is always best to contract entrances in a time of dearth, to prevent accidental robbing. But the size of the entrance should be according to the strength of the colony, and it is impossible to give that as an invariable rule.

3. A colony of cross bees should be deprived of its queen and a queen given it of a more gentle breed. Sometimes, however, cross bees are made so by mismanagement or by being exposed to the attacks of other bees, when there is no crop.

### Two Queens in One Hive

I note in the Journal an editorial which states "more and more we are getting reports of two queens in one hive."

Here is another: I have a colony that I know positively has had two queens in it for the last two months, that were still in there the last time I looked.

On one occasion I saw the old queen (which is clipped) and her offspring within one-half an inch of one another, apparently very peaceable and contented.

I raised a few queens in second story earlier in the season, which may have gotten the workers accustomed to more than one queen in the hive.

I would like to know now if the two queens will survive the winter.

On account of our first light frost killing goldenrod and tender plants in early October, my winter stores are not as plentiful as I would like. Our first real frost was October 29, temperature dropped from summer heat to 29 degrees. A late spring will call for lots of feeding. KENTUCKY.

Answer.—Whether the old queen will survive the winter is a matter of opinion, for we "don't know." But it is probable that the old queen will disappear in some way. Evidently neither the workers nor the young queen consider her any longer as a queen, and she probably does not lay.

It is somewhat strange that frost should have killed a part of the vegetation in early October, at Louisville, on the Ohio, just above the 38th degree, when it did not kill anything at Hamilton, on the Mississippi, just above the 40th. Those are some of the freaks of temperature. We had tomatoes ripening on the vines till October 28.

### Honey for Feeding—Stings

1. Will honey from Texas and other States

be safe to feed bees in winter, or is there too much danger of foulbrood?

2. Can it be heated enough to kill the germs?

3. Is the bee sting in the ear or on a blood vessel dangerous? Has it proved fatal, to your knowledge? OKLAHOMA.

Answers.—1. I would not, under any consideration, feed to bees honey of which I did not know the exact source. In many cases this honey would be safe, but the risk to run is too great.

2. Yes, if you heat it, and keep it at the temperature of boiling for half an hour, we are told by those who experimented, that it kills the germs. But such honey might not be very good for wintering. Sugar syrup would be safer.

3. Of course, a bee sting on a blood vessel will diffuse its poison faster than in the muscles; but as there are blood vessels all through the body, the sting on a large blood vessel will not increase the trouble, but will probably make it a little more acute at first. Stings reaching a nerve are probably the most painful. But the very few people who have been stung with fatal results have probably been stung a number of times at the same moment. Probably a doctor could give a more positive answer.

### Top Entrances

1. Do you know of any experiments with top entrances? How would bees clean up from the bottom, then?

2. What drug in food would act as a laxative? I am experimenting with a case of mild Isle-of-Wight disease and think aperient treatment would be good. ENGLAND.

Answers.—1. Top entrances have not usually proven satisfactory for the very objection which you raise.

2. A laxative, to our mind, is perhaps needed to cure Isle-of-Wight disease, but we doubt the efficacy of anything of that kind. A tonic would perhaps act well towards preventing the coming of the disease. At any rate, we would try a tonic if we were in a Isle-of-Wight locality. The Italians recommend a tea of rosemary, cinnamon, ginger, saffron, thyme, etc., boiled in water and mixed in honey.

### Cleaning Combs

Is it necessary to return combs to bees to clean out?

I had American foulbrood, two cases of it, and am afraid to let the bees clean them. I usually extract the combs the second time, and that leaves a very little honey in them. INDIANA.

Answer.—We usually return the combs to the hives to be cleaned by the bees, immediately after extracting, or the same evening. Some people give them out to the bees, in the open. This method would be deadly if there is any trace of foulbrood. To avoid the spreading of the disease, the only way is to return to each colony its own combs, so that there will be no increase of danger of contagion, to any other colonies than those already contaminated.

Whether there is much or little honey left in the combs, there is always a danger if there is any disease at all. It would perhaps be best for them to be cleaned before winter, as the honey left in them would not run

the risk of spreading the disease in spring, since it might be consumed. But it is now too late to do anything of the kind. If you treated your bees and did away with the disease, there is a probability that your combs are immune.

### Carbon Disulphide

Will honey in comb that has been treated by carbon disulphide, to kill the wax moth, be poisonous to eat? MISSOURI

Answer.—Although we have never made a positive test of this, I do not hesitate in saying that those combs and the honey in them would be perfectly safe to eat, for the very simple reason that it is the fumes that kill the insects and those fumes evaporate readily. Moreover, I find in the "United States Dispensatory," 19th edition, the statement that the disulphide has been used "in diarrhea, in a 3.5 per cent solution, a dose of which is two tablespoonfuls four or five times a day."

The disulphide is very volatile, so that it vaporizes rapidly, therefore very little of it, if any, would remain on the surface of the combs. When we add to this the fact that comb-honey, when treated, is usually sealed, we can see no danger whatever in its use to asphyxiate the moths.

It is unnecessary to add that the liquid carbon disulphide is not intended to be used internally. The man who would use it would be on a par with the good woman who bought "bedbug powder" to kill the bedbugs that annoyed her sick husband, in bed, and after having treated him to a dose of it, was very much astonished that it should have made him sick, while "it did not seem to affect the bedbugs."

### Building Up Nucleus

How many pounds of sugar would it take to feed a three-frame nucleus to enable them to build up to a six-frame colony in as short a time as possible, when there is no honey flow on? MISSOURI.

Answer.—This cannot be done without permitting the bees to fly each day, the amount of sugar necessary is problematical, for bees will find honey while they are hunting for pollen. They need pollen as well as honey. The quantity of sugar needed will therefore depend upon the conditions of the field. The warmth of the atmosphere will also influence the result. In cool weather the bees would consume a great deal more than in warm weather. They would also spread the brood less readily in cool weather. So you will see that an answer given in pounds might lead you astray.

### Laws in Illinois

1. What are the laws of Illinois in regard to taking bees into the State? Do bees have to have a certificate of inspection?

2. If I should want to ship bees to New York State, 800 miles, can I ship them by freight in December? My hives are all double-wall dovetailed hives. ILLINOIS.

Answers.—1. The State law, as far as we know, does not forbid the introduction of bees into the State. But it declares diseased bees and their appurtenances a "nuisance," and any one who sells, barter or gives away bees that are diseased exposes himself to a fine. It would evidently be the same for the man who imported diseased bees into the State.

2. Do not ship bees by freight to any great distance, unless you go with them, or ship them in carload lots. If you want to ship bees to New York State, better send them by express, if there are not enough of them to make a carload.

## ODDS AND ENDS

### Inspectors' Meeting

A meeting of the Apicultural Inspectors of the Upper Mississippi Valley was held at Chicago on December 6, at the request of B. F. Kindig. Uniform methods of inspection and certification were discussed. The States represented by the official Apiary Inspectors were: Michigan, Wisconsin, Minnesota, Illinois, Indiana, Iowa, Ohio, New York and Ontario.

### Collier to Move

W. C. Collier, long of Goliad, Texas, is making arrangements to move to Hillsboro, in Hill County, in the cotton belt. We understand that he expects to combine the shipping of live bees with production of honey. Collier is one of the well-known Texas producers, prominent in the affairs of the Co-operative Association of that State.

### Bees Go to Store for Honey

A New York newspaper recently gave an account of a case where the bees found a way into a store where comb honey was kept on open shelves and carried away a goodly portion before the owner was able to shut them out.

### California Meet

The thirty-second annual meeting of the California State Beekeepers' Association will meet for a four-days' session March 1, 2, 3 and 4, 1921, in Oakland.

Cary W. Hartman, President of the Alameda County Beekeepers' Association and Chairman of the Program Committee for the annual meeting, writes that they expect to make it the biggest and best meeting in the history of the organization. The Chamber of Commerce of Oakland and University of California at Berkeley, joined with the Alameda County Beekeepers' Association in their effort to get the meeting place at Oakland, and were successful.

Mr Hartman is anxious to get in touch with beekeepers from the East, who expect to be in California at the time, so as to see they are supplied with literature and in every way kept informed in reference to the meeting.

On the program will be found the leading beekeepers of the West, as well as some of the best from the East. Those interested can have programs mailed to them as soon as they are off the press, by addressing: Cary W. Hartman, Chairman Program Committee, 400 Hutchinson Building, Oakland, California.

### A Notable Meeting

The Chicago meeting of the American Association of Economic Entomologists during the holiday vacation was well attended. The program of the section devoted to apiculture was the best in its history. It is the policy of the section to confine its

program to such matters as are of direct interest to those engaged in educational or research work. Prof. H. F. Wilson, of the Wisconsin State University, was elected chairman of the section for the coming year, and Prof. G. M. Bentley was re-elected secretary. The following resolutions were adopted:

"The Section of Apiculture of the American Association of Economic Entomologists hereby expresses its approval of the informal agreement made by the apiary inspectors of the north Central States and Canada at a recent meeting, December 6, 1920, held in Chicago, Ill., as follows:

"Section 1. Resolved, That the undersigned apiary inspectors of the North Central States and Canada, believe and agree that inspection certificates for the interstate transportation of bees and used apiary supplies should be given only to apiaries which have never been infected, or which have been free from American foulbrood for at least one year.

"Provided, however, that bees in combless packages supplied with food made from pure sugar only, are exempted from the provisions of the section.

"Section 2. It is further agreed that whenever a case of the interstate transportation of bees or used bee supplies, with or without an inspection certificate, comes to the attention of the apiary inspector of any State, full information will be sent to the State inspector of the State of destination.

"It is the further belief and recommendation of the Section of Apiculture that Federal Legislation providing for the regulation of the interstate transportation of bees and used apiary supplies should be enacted."

E. D. Ball,  
E. C. Cotton,  
S. B. Fracker,  
Committee.

### A Co-Operative Association

The newly-organized Wisconsin Honey Producers' Co-operative Association will be guided in its destinies by A. Swahn, of Ellsworth, President, and F. F. Stelling, Reedsville, Vice President, and H. F. Wilson, Madison, Secretary-Treasurer. These temporary officers were chosen at a recent meeting of the new association at Madison, and the Wisconsin movement has received the sanction of the State authorities by incorporating for \$1,000. This temporary incorporation capital is to be increased to \$25,000 by the end of the season, shares being sold by solicitation of the officers at \$10 each.

At the last State convention the movement received the official approval of the beekeepers of Wisconsin and the organization has been completed as rapidly as possible. The purposes of the body are to "aid its members in marketing their honey crop at a reasonable and just price," according to statements issued by the Secretary. It is proposed to develop some plan of advertising and

distributing the honey crop. The movement is necessitated, according to Mr. Wilson, because thousands of pounds of honey are being dumped on the market by small dealers at prices which do not justify the time, labor and expense involved in their beekeeping work.

### Speed in Honey Production

A farmer desirous of keeping bees decided to buy a swarm from one of his neighbors. So he bought an empty hive. The swarm was late in coming, but it came at last. As the parents were not at home, the neighbor who brought the bees followed the advice of the daughter of the house and placed the bees in the new hive. There were neither combs nor comb-foundation. The following day the same lady happened to have the visit of a few girl friends. She served tea, butter sandwiches, pastry. Then a happy thought struck her: "We have bees, we will have some honey. Yes, it will be so nice!" Quick as lightning she goes to the looking glass, puts on her hat, and runs to the neighbor with a glass jar. "Oh, please will you not take some honey from our bees for us? I have some visitors." Just think; they were hived yesterday!—Adapted from the "Bulletin de la Societe Romande."

### Honey Sales

Co-operation is in the wind. The beekeepers of the "Federation Vaudoise," Switzerland, are organizing a "sales agency" for honey. No one will be compelled to sell through this agency, those who sell through it paying a premium for the benefit of the association upon the quantity sold through this agency. The margin thus made, after paying expenses, will be expended in advertising, sending out slips and pamphlets, for the purpose of making honey more popular and increasing the demand.

The editor of the "Bulletin" comments upon this by saying that although honey has always sold readily in Switzerland, it would be a mistake to wait till the shipwreck before building salvage boats. That is very well put. The Swiss can give us good example in many things.

### Loss of Bees in Maryland

According to available 1920 census figures, there are only 16,117 colonies of bees in Maryland, as against 25,156 colonies in 1910, or a loss of nearly 30 per cent. The honey crop for 1920 was 215,685 pounds, or a per colony production of 13½ pounds.

### Gleanings \$1.50

In a recent issue of Western Honeybee the A. I. Root Co. announce that after February 1 the subscription price of Gleanings will be \$1.50 per year. In view of the fact that publishing costs have increased out of proportion to costs in other lines, and also of the fact that many publications have increased their subscription rates from two to



four times, the increases made by the bee magazines are very moderate. The bee papers held off for two years after most other publications had advanced their rates and then made a much smaller advance than most other publications.

#### Beekeeping in School

By the way, did you know that beekeeping is taught in the schools in Louisiana, in both the grades and high school?

The elementary arithmetic has one division in it on "Farm Arithmetic," along with a division on "poultry," "swine," "cattle," etc. and the agriculture for seventh grade has one chapter on beekeeping, along with the above subjects. Jess Dalton.

Bordelonville, La.

#### A Czechoslovak Beekeeper

An enthusiastic follower of American methods in beekeeping, in the new Republic of Czechoslovakia has lately passed away, Wenceslaus Svarc. He founded a bee magazine which was published from 1903 till the outbreak of the war. He also founded a beekeepers' school in Tynice, near Prague. He was called in that country "the father of beekeeping." He was also author of a book in Bohemian, on "Progressive Beekeeping."

#### New Oregon Association

The beekeepers of Deschutes County, Oregon, met at Redmond on December 7 and organized a county association with the following officers: President, A. J. Sanford, Redmond, Ore.; Vice President, B. D. Becker, Tumalo, Ore.; Secretary, County Agent Jamison, Redmond, Ore.; Treasurer, John Marsh, Tumalo, Ore.

#### West Virginia Meeting

The West Virginia Beekeepers' Association meeting will be held, as usual, in the State House of Charleston, on March 25 and 26. All West Virginia beekeepers interested are requested to attend.

Will C. Griffith, Secy.,  
Elm Grove, W. Va.

#### Honey Not a Luxury

In a recent issue of "Science," M. C. Tanquary, State Entomologist of Texas, has an article taking issue with a previous correspondent who regards honey as a luxury. Tanquary very properly takes the position that such persons usually buy in very small quantity and thus pay more for the container and labor of packing than for the honey itself. He urges that honey be purchased in large quantity, and mentions the 60-pound can as a desirable size for family use.

#### Tariff on Honey

From the Department of Commerce we learn that from 1867 to 1894 a duty of twenty cents per gallon was assessed on honey, imported from other countries. From 1895 to 1897 the duty was ten cents per gallon. From 1898 to 1913 the duty was

again 20 cents per gallon, and since that date ten cents per gallon. The present rate of ten cents per gallon is less than one cent per pound. Imports from Cuba under the reciprocity treaty are ten per cent less twenty per cent, while importations from Porto Rico, a United States possession, are free of duty. Imports

tations from the other islands of the West Indies, as well as other foreign countries pay the full rate of duty.

Beeswax, on the other hand, comes in free of duty and large quantities have been coming in from Africa and South America for some months past.

## Quality Bee Supplies

FROM A

## Reliable House

Without fear or favor, I place my BEE SUPPLIES and SERVICE before you.

It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S GOODS.

Quality is first—save time when you put your goods together, by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

I am ready to meet your urgent needs.

Send for my new price list.

Closing out all Langstroth and Wisconsin hives and supers. Also Langstroth triangular top-bar frames and eight-frame D. T. supers for 4x5 sections. Will sell at cost price. Write for quotations.

### CHAS. MONDENG

146 Newton Ave. N. and 159 Cedar Lake Rd. Minneapolis, Minn.



## QUEENS

Write for our catalog of high grade Italian Queens. Pure mating and safe arrival guaranteed.

Prices for 1921:

1 to 4 inclusive.....	\$ 3.00 ea.
5 to 9 inclusive.....	2 90 ea
10 or more.....	2.80 ea.
Breeders.....	12.00 ea.

JAY SMITH (Route Three) Vincennes, Ind.

## Italian Bees by the Pound in Packages

### GOLDEN QUEENS

### 3-BAND QUEENS

We are better prepared than ever before to handle a large demand for both queens and bees by the pound. Let us send you one of our 1921 circulars and late price lists. We are now booking orders almost daily for next spring delivery. Let us book your order now, so as to assure prompt delivery when the bees or queens are wanted. Only a limited number of orders will be accepted for booking, as we are absolutely determined to take only as many orders as we can handle absolutely on time.

M. C. BERRY & COMPANY, Hayneville, Ala., U. S. A.

**Death of Lady Beekeeper**

Mrs. Beulah Reed, wife of Earl C. Reed, of Ranchester, Wyoming, died on November 3, at the age of 34 years, leaving four children and her husband. Mr. and Mrs. Reed had recently taken up beekeeping as an exclusive business. Mrs. Reed was keenly interested in the bees and will be greatly missed, both in the home and in the apiary.

**Inspector's Report**

A copy of the sixth annual report of the Minnesota Inspector of Apiaries recently came to the editor's desk. It contains the usual statistical information regarding the activities of the inspectors for the past year and in addition discusses brood diseases of bees, transferring, etc. It contains 18 pages and can probably be secured by addressing Charles D. Blaker, Minneapolis, Minn.

**Illinois**

Illinois is asking \$10,000 for bee inspection work for 1921. The State Association has also recommended the establishment of a complete department of Beekeeping at the University for education and extension. The budget for the University includes recommendations for a department of beekeeping. Favorable action on the part of the Illinois Legislature will assure a fair start to-

wards better work on beekeeping in the State.

**Exhibit Sells Honey**

I am the first beekeeper in this part of the country that got the movable-frame hives.

I had an observation hive with golden Italian bees and queen at our township fair this last fall, and it sure was a treat to everybody. Lots of old men had never seen a queen; it kept me busy pointing out the queen.

I sold all my honey that I had to sell, at 40 cent a pound, and could have sold a thousand pounds more, if I had had it. Geo. W. Jones.

Keota, Okla.

(Compliments for your good management. You can surely sell honey if you only let people know that you have it. Your example should be followed by others.—Editor.)

**Illinois Joins Honey Producers' League**

At its recent meeting the Illinois State Beekeepers' Association voted to join the American Honey Producers' League.

**Census Reports**

Advance census reports give the 1920 bee population of Ohio as 105,675 colonies, as against 98,242 colonies in 1910.

The honey production for the State in 1920 is given as 835,894 pounds, or less than 8 pounds per colony.

On the other hand, data, carefully collected by Paddock, of Iowa, shows that Woodbury County, Iowa, produced one and one half million pounds of honey in 1920.

All of which leads us to wonder how valuable the census will be, especially in view of the fact that no statistics for bees or honey were collected in cities.

**Iowa Association**

Secretary Paddock reports a total of 365 paid-up members for the Iowa Beekeepers' Association, with 162 who are in arrears for dues, making a total of 527 members. It would be interesting to know what the total membership of all American beekeepers' organizations would number.

**Good Queens**

Professor Paddock, of Iowa, has made very interesting observations on purchases of three-pound packages with queens and three-frame nuclei with queens. His conclusions show that by closer selection of queens the per colony production could be increased and even doubled. Some queens showed such poor production as to have lost their owner \$18 each.

We hope to have more on these experiments later.

We have obtained a large amount of 1 pound glass jars that we can offer at \$6.85 per gross, F. O. B., Newark, N. Y.

**Friction Top Pails all ready for delivery at Newark, New York**

2½ pound cans, f. o. b.-----	\$ 6.50 per hundred
3 pound cans, f. o. b.-----	7.00 per hundred
5 pound pails, f. o. b.-----	10.70 per hundred
10 pound pails, f. o. b.-----	16.00 per hundred

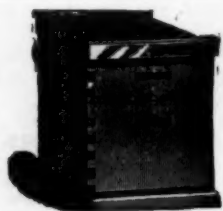
The above prices are f. o. b. Newark, of \$1 per hundred less f. o. b. Baltimore, Md.

Now is a fine time to gather up your old combs and ship them in for rendering. Write for our terms and shipping tags. Highest cash prices paid for beeswax, or we will change your wax for foundation.

We have in reserve a complete line of bee supplies which we can quote you attractive prices on. We also have some special offers to make on 8-frame hives, bottom-boards and covers.

Send in your list of requirements and let us quote you on same.

**Address THE DERROY TAYLOR CO., Newark (Wayne Co.), N. Y.**

**MR. BEEKEEPER—**

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

**LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri**

J. W. ROUSE, Mexico, Missouri

A. M. HUNT, Goldthwaite, Missouri



### A New York Meeting

The Ulster County, New York, Honey Producers' Co-operative Association held their annual meeting January 8, 1921. The association is affiliated with the State Association and this winter is buying supplies co-operatively. Later they expect to sell their surplus honey through the State Association in the same way. It was voted to have an outing trip (by autos) May 25, 1921, visiting many of the apiaries of Ulster County and making an advertising campaign of the trip as well.

### Mrs. Blaker Dies

We regret to have to announce the death of Mrs. C. D. Blaker, wife of the efficient Minnesota State Bee Inspector, which occurred in Minneapolis on December 30. Our sympathy goes to Mr. Blaker.

### Watson to Texas

Mr. Lloyd R. Watson, Assistant Apiculturist in the Bureau of Entomology at Washington, will shortly take up his duties as assistant to Dr. Tanquary, at College Station, Texas. Mr. Watson will have charge of the State Experimental Apiaries, and will devote his entire time to experimental work in apiculture.

### Queen Best Second Year

"There is no doubt whatever that the queenbee is in her prime for breeding, the second year of her existence, after which her vigor sensibly declines."—American Bee Journal, 1866.

### Italian Bees and Alsike Clover

In an early issue of the American Bee Journal the fact is stated that Samuel Wagner, first editor of this Journal, was the first to call the attention of American beekeepers to Italian bees and alsike clover. Both have proven to be especially adapted to American conditions and have become so widely established in this country as to be taken as a matter of course. Their introduction has been worth untold millions of dollars to agricultural interests in this country.

### Honey as an Energy Producer

A new bulletin recently issued by the Department of Agriculture of the Province of Quebec, gives a table of comparative values of honey and other sugar as producers of energy. Honey, according to this authority, produces 100 calories of heat with one tablespoonful, while granulated sugar requires two tablespoonfuls to produce 100 calories, or twice the amount.

### Honey Changing Quality

American Bee Journal, November, 1920, page 376: "What is the trouble? Who can tell? Answer: Percentage of invert sugar in honey varies from 49.59 to 93.96. (Neufeld Der Nahrungsmittelchemiker als Sachverständiger, Berlin, 1907, page 275). In this case, too low percentage of sugar allowed activity of some

kind of organism which might have been prevented had temperature of honey been raised slowly to 150 degrees and then dropped quickly. A saccharometer might determine the necessity of using heat. Capped honey does not always contain same percentage of sugar.

William O. Dyer.

Rhode Island.

### Bee Hunting

The September number of the Dixie Beekeeper has a two-page article by its editor, on bee hunting in the Blue Ridge Mountains of Northern Georgia. Mr. Wilder is an enthusiastic man and enjoys the sports of hunting game, fishing and bee hunting, and his descriptions make us wish to be with him a few days at such times. He does not think only of making money, and evidently can see the beauties of nature and enjoy the relaxation from work which such sports entail.

### Queenless Swarm Filling Its Hive

The British Bee Journal of October 21 inserts the letter of a beekeeper, A. Lewis, giving the account of a natural swarm which lost its queen, but filled the hive full of comb and honey, without a single one of the cells having been occupied with brood. I remember a similar occurrence which I witnessed in my young days. Having gone to buy bees from a box-hive beekeeper, we examined together all his colonies, about the last of October. We found one, a new swarm, in which there was not over a handful of bees, and no queen. The hive had been filled with honey to the bottom, leaving not over 4 square inches of empty comb. But I cannot remember whether there had been no brood at all. It was a fine box full of virgin honey. The swarm must have been very strong and the season good. I never saw anything like it since.

### British Bee Magazines

We have had several enquiries for the addresses of British bee magazines. The following are the ones we know of:

The British Bee Journal (weekly), 23 Bedford St., Strand, London, W. C., England.

The Bee World appears only quarterly, at present, Benson, Oxon, England.

Bee-Craft (very small), J. C. Whettam, 18 Kingswood Avenue, Chatham, England.

Beekeepers' Record (monthly), same address as British Bee Journal.

The Irish Bee Journal, Lough Rynn, R. S. O., Co. Leitrim, Ireland.

### Iowa Beekeeping Important

F. B. Paddock, State Apiarist of Iowa, estimates that in 1919 there was produced 13,350,000 pounds of honey, worth \$2,670,000, and that the total investment in bees and equipment amounts to \$4,500,000. He states, further, that Iowa produces 6 per cent of the total output of honey of the

nation, and that it is exceeded only by California, which produces 15 per cent, and Texas with 7 per cent of the whole. According to his information, the consumption of honey in Iowa has increased 33 1-3 per cent in the last three years.

### Honey Sold

The Illinois crop of honey for 1920 is largely disposed of. In fact, likely many localities will be under supplied. Another case of lack of proper distribution of our product.

### Lavender Seed

There have been numerous letters from our readers asking where lavender seed can be secured. We find by correspondence that many of the seed houses carry it at 10 cents per packet. Look in your flower-seed catalog.

### Salt

Of two drinking vessels, that containing slightly salted water seemed to be slightly preferred by the bees. —Bienen-Vater, quoted by the Bee World).

### A New Kind of Honey

A lady stopped and enquired for honey. I asked what kind she wanted, and she replied: "She (female) honey. He (male) honey is bitter." I showed her some comb honey. She then said: "That is all right; there is no 'he' honey in that."

New York

### What Puzzled Her

Lady to Beekeeper: "So you keep bees! I think they are just perfectly adorable little creatures; I have just read Maeterlinck's 'The Life of the Bee.' But one thing has always puzzled me: How do you put that little wooden box around the cake of honey without crushing that delicate wax?"—Beekeepers' Item.

## CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

### BEEES AND QUEENS

Lower Price. Top Quality. Atwater's Honey.

FOR SALE—Utopian quality Italian queens, the kind that satisfy. May 15 to June 10, untested, \$3 each. After June 10, untested, \$1.50 each. 6, \$8. Virgins, 90c each; 6, \$4.75. Utopian Apiaries, Amboy, Minn.

FOR SALE—Twelve colonies Italians in 2 stories packed in quadruple cases according to Government Bulletin; 5 hives, 12 tons and bottoms; all 10-frame Standard Hoffman; 21 supers equipped for comb honey; 1,000 sections 10 lbs. foundation, feeders, excluders, traps, etc. All new equipment; \$400 cash. Wm. Elges, Heyworth, Ill.

FOR SALE—50 colonies Italian bees in 8-frame new hives, on full sheets foundation and wired, equipment. All in good condition. All goes together for \$10 per colony. No disease. Lee Elliott, Greenview, Ill.

**FOR SALE**—We have a few hundred fine packages of three-band and golden bees for sale that we have not sold or taken orders for; they are as fine honey gatherers as can be started, a cross of the Davis, Root and Geo. B. Howe strain of bees that get the goods, pile up the honey. First come first served. We do not care for more orders than we can properly care for, and will not accept more than that. Write for prices, delivered spring 1921.

H. B. Murray, Liberty, N. C.

**GOOD STOCK**, plus long experience in shipping bees make it profitable to buy package bees or nuclei. Write for my new circular.

R. V. Stearns, Brady, Texas.

**THE ITALIAN QUEENS OF WINDMERE** are superior three-banded stock. Untested, \$1.50 each, six for \$8; tested, \$2.50 each; select tested, \$3. Bees by the pound; write for prices.

Prof. W. A. Matheny,  
Ohio University, Athens, Ohio.

**FOR SALE**—Day-old queens, disease resistant Italians. Arrival guaranteed in United States and Canada. High quality, low price, satisfaction. Safe introduction described in circular. Order early. prices: April 15 to September 30, 1, 75c; 12, \$7.20; 100, \$60.

James McKee, Riverside, Calif.

**FOR SALE**—Bees for strengthening purposes, 3-frame nuclei of hybrid or black bees on frames containing brood, at \$5.25 f. o. b. Lyons, Ga. No queens included; none for sale. Will be able to start shipping April 20. No disease; safe arrival guaranteed if express agent notes loss on express tag. One-third cash with order. Book your orders at once, as number of nuclei for shipment will be limited.

Otto Diestel, Elza, Ga.

**FOR SALE**—Golden Italian queens, untested, \$1.50 each, dozen \$14. Bees by the pound a specialty. Write for prices on bees.

E. A. Simmons, Greenville, Ala.

**FOR SALE**—Queens and bees, Italians and goldens, \$1.50 each, \$15 per dozen; 1 lb. bees, \$5, 2 lbs. bees, \$9. If queen is wanted with bees add the price of queen. Safe arrival and satisfaction guaranteed in United States or Canada. Cash or certified check must accompany all orders where parties are not known or satisfactorily rated.

Graydon Bros., Rt. 4, Greenville, Ala.

**FOR SALE**—Root's strain of golden and leather-colored Italian queens; bees by the pound and nuclei. Untested queens, \$1.50 each; select untested, \$2 each; tested, \$2.50 each; select tested, \$3 each. For larger lots write. Circular free.

A. J. Pinard,  
440 N. 6th St., San Jose, Calif.

**FOR SALE**—Bees in 10-frame Hoffman hives. All foundation drawn comb, about 35 hives. Also extra hives and supers with drawn comb. Bees located near Kingston, N. Y.

J. O. Stewart, 742 Elmore Pl., Brooklyn, N. Y.

**NUCLEI FOR 1921**—Now booking orders for 1921 delivery. Italian nuclei (with queen), \$6.50 each. Hybrid bees, with pure Italian queen, \$5.50 each. Terms, one-third down with order. No disease. Safe arrival and satisfaction guaranteed.

A. R. Irish, Doctortown, Ga.

**I BUY BEES** in colonies. If you have one or more, write.

Frank Coyle, Penfield, Ill.

**FOR SALE**—Will now book orders for our high-grade 3-banded Italian bees on wired Hoffman frames, for May and June delivery, beginning May 20. In 1920 we shipped 50 3-frame nuclei to a party in Montana without a single loss; no foulbrood. Our bees have been inspected by State Bee Inspector, in 1920. One full colony in 8-frame D. D. hive, with select tested queen, \$17; one 3-frame nucleus, with select tested queen, \$8; one 2-frame nucleus, with select tested queen, \$7; one 2-lb. package bees, with untested queen, in June, \$6.50; one 1-lb. package bees, with untested queen, in June, \$4. Prices on queens given later. Terms, 10 per cent with order; balance first of month in which bees are to be shipped, or 5 per cent discount cash with order. Safe arrival guaranteed.

J. W. Bittenbender, Knoxville, Ia.

**THREE-BAND BREEDERS** from one of the heaviest honey-gathering strains in the State. \$10 each. Delivery May 15.

A. V. Small, Augusta, Kans.

**FOR SALE**—Italian bees with comb and extracting equipment.

Wm. Kruse, Jr., Godfrey, Ill.

**BEES** in 2-pound packages, with or without queens. Now booking orders for spring delivery. Safe arrival guaranteed. Always glad to answer questions. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

**1921 PRICES** on nuclei and queens: 1-frame nucleus, \$3; 2-frame nucleus, \$5; 3-frame nucleus, \$6.50; without queens, f. o. b. Macon, Miss.; 5 per cent discount on lots of 25 or more. Untested queens \$1.25 each, \$15 per doz.; tested queens \$2 each, \$22 per doz. No disease; inspection certificate with each shipment. Safe arrival and satisfaction guaranteed in U. S. Queens sold only with nuclei.

Geo. A. Hummer & Sons, Prairie Point, Miss.

**FOR SALE**—Three-banded; Italian queens untested, \$1.50 each; 6, \$7.50; 12, \$14. Select untested, \$1.75 each; satisfaction guaranteed.

W. T. Perdue & Sons,  
R. No. 1, Fort Deposit, Ala.

**WE** are booking orders for our golden Italian queens for spring delivery after April 15. Untested queens, 1, \$1.50; doz., \$15; select untested queens, 1, \$1.75; doz., \$18; virgin queens, 1, 75c; doz., \$9; tested queens, 1, \$3; doz., \$36. Safe arrival guaranteed.

Tillery Brothers, Georgiana, Ala.

**FOR SALE**—Large, hardy, prolific queens: 3-banded Italians and golden; pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. Untested, \$2 each; 6, for \$11; 25 for \$45; tested queens \$3 each, 6 for \$16.

Buckeye Bee Co., Box 448 Massillon, Ohio.

**WE** are now booking orders for early spring delivery of two and three-frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.

Sarasota Bee Co., Sarasota, Fla.

**FOR SPRING DELIVERY**—One good Italian queen, 1 Hoffman standard frame emerging brood, 1 pound live bees, price complete \$6.50, f. o. b. Bordelonville. Queen introduced, mated, laying enroute; loss in transit replaced if noted on express tag by agent; no disease in State. References given. Orders booked, May delivery, one-fifth cash; orders filled in rotation.

Jess Dalton, Bordelonville, La.

**EDSON APIARIES** now booking orders for queen bees for delivery during season of 1921. Prices: One untested queen, \$1.25; 50 untested queens, \$57.50; 100 untested queens, \$100. Orders filled in rotation; first shipments March 1, 1921.

Edson Apiaries, Gridley, Calif.

**PURE ITALIAN QUEENS**—Golden or leather colored, packages and nuclei: 1 untested queen, \$1.50; 6, \$7.50; 12, \$13.50; 50, \$55; 100, \$100; virgins, 50c each; packages, 24 and under, \$2.25 per pound; 25 and over, \$3 per pound; nuclei, 1-frame, \$4; 2-frame, \$6; 3-frame, \$7.50; queens extra. One-story 10-frame colony with queen, \$12.

Golden Star Apiaries,  
R. 3, Box 166, Chico, Calif.

**BEES AND QUEENS** from my New Jersey apiary

J. H. M. Cook,  
141st 84 Cortland St., New York City.

**PACKAGE BEES AND PURE ITALIAN QUEENS**—Booking orders now for spring delivery. Circular free.

J. E. Wing,  
155 Schiele Ave., San Jose, Calif.

**BOOK YOUR ORDERS FOR QUEENS** now—Goldens, \$2; tested, \$3; banded, \$1.50; tested, \$2.50; six or more, 10 per cent less.

Clover Leaf Apiaries, Wahoo, Neb.

**"QUALITY" THREE-BANDED ITALIANS** from excellent stock; untested queens, 1, \$1.50; 6 for \$7.50; 12 for \$12.50; 50 for \$55; 100 for \$100.

N. J. James,  
1185 Bird Ave., San Jose, Calif.

**HIGH GRADE ITALIAN QUEENS**—Send for catalog.

Jay Smith, R. 3, Vincennes, Ind.

**BEES BY THE POUND, ALSO QUEENS**—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere.

Nueces County Apiaries, Calallen, Texas,  
E. B. Ault, Prop.

## HONEY AND BEESWAX

**Lower Price. Top Quality. Atwater's Honey.**

**FOR SALE**—25 barrels amber extracted honey, 12½c per pound.

H. G. Quirin, Bellevue, Ohio.

**FOR SALE**—Finest quality alfalfa-sweet clover extracted honey in 60-lb. cans, 16c. Pure alfalfa, water white, 17c.

J. A. Green, Grand Junction, Colo.

**HONEY FOR SALE** in 5 and 60-lb. cans.

Van Wyngarden Bros., Hebron, Ind.

**FOR SALE**—Extracted clover-basswood honey; finest quality, put up in 10-lb. pails.

S. E. Angell, Clear Lake, Wis.

**FOR SALE**—Choice clover extracted honey, \$21.50 per case of two 60-lb. cans. Write for price for large quantities; 50 cases of No. 1. comb honey.

J. D. Beals, Oto, Iowa.

**FOR SALE**—Guaranteed pure extracted honey, new crop clover and basswood, 60-lb. cans \$15, 10-lb. pails \$2.80. Sample 15c.

Ed. B. Klimascheky, Mahanomen, Minn.

**FOR SALE**—Finest white clover honey, 10-lb. pails, 6 to case, 25c lb.

W. L. Ritter, Genoa, Ill.

**FOR SALE**—1,600 lbs. of extracted honey, a blend of white alsike and sweet clover and heartcase. This honey was left on the hive until the last of November. One case of two 5-gallon cans, \$27.20; if more is wanted, write for prices.

A. L. Kildow, Putnam, Ill.

**FOR SALE**—Finest Michigan raspberry, basswood and clover honey in 60-lb. cans, 20c per pound. Heartcase and aster, 18c. Free sample.

W. A. Latshaw Co., Carlisle, Ind.

**HONEY FOR SALE**—Immediate N. Y. shipments, clover or sage qualities. White grade at 18c lb., or light amber grades at 16c per lb. Two 60-lb. cans in case. Light amber West Indian grade (50 gal. barrels) 90c per gallon. All f. o. b. New York City.

Hoffman & Hauck, Inc., Woodhaven, N. Y.

**FOR SALE**—3,200 lbs. of fancy basswood-clover extracted honey in new 60-lb. cans; also 1,215 lbs. of buckwheat.

A. Blanchard, Naples, N. Y.

**FOR SALE**—Fine grade of clover honey in 60-lb. cans, 18c a pound f. o. b. Des Moines, Ia. Light amber 16c, f. o. b.

Bert A. Brown, Des Moines, Ia.

**FOR SALE**—9,000 lbs. of fine clover and basswood extracted honey, put up in new 60-lb. cans, 16c f. o. b. Orangeville, Ill.

C. E. Kister, Orangeville, Ill.

**WANTED**—White clover honey, comb and extracted, one case up.

Frank Coyle, Penfield, Ill.

**FOR SALE**—Extracted honey in 60-lb. cans, 2 cans in a box, white clover and basswood blend, per can \$11.40. Light amber, fine, \$10.80; amber \$10.20. Sample 10c.

J. W. Bittenbender, Knoxville, Ia.

**FOR SALE**—Choice New York State clover honey in 60-lb. cans, two cans per case, at 14c per lb. f. o. b. Delanson.

F. C. Alexander, Delanson, N. Y.

**FOR SALE**—Amber honey, 2 60-lb. cans per case, 15c per pound; less in 10-case lots.

Arthur Knerston, Shreveport, La., Gen. Del.

**NEW HONEY. NEW PRICES**—Supply your customers, finest alfalfa-clover honey, extra strong cases, \$11.50 for one 60-lb. can, \$21.60 case of 2, all f. o. b. here. Write for prices large lots. Two carloads sold; plenty on hand.

E. F. Atwater, Box 37J, Meridian, Idaho.

**FOR SALE**—Finest white clover and basswood extracted honey in 60-pound cans.

Noah Bordner, Holgate, Ohio.

**SOUTHERN AMBER HONEY**—Two 60-lb. cans to the case, 15c per pound.

Walter Reppert, Shreveport, La., Gen. Del.

**FOR SALE**—Very fine quality basswood-milkweed (mostly milkweed) honey in 60-pound cans.

P. W. Sowinski, Bellaire, Mich.



**FOR SALE**—Finest quality extracted honey in 60 lb. square cans 2 cans per case. State how much you can use and I will quote you on same.  
Angus M. Paterson,  
219 E. 5th St., Flint, Mich.

**FOR SALE**—Clover and buckwheat honey, either comb or extracted, at reduced prices; any style container. A postcard will bring our quotations.  
The Deroy Taylor Co.,  
Wayne Co., Newark, N. Y.

**WANTED**—Comb and extracted honey.  
The L. H. Snider Apiaries, Auburn, Ind.

**WANTED**—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,  
204 Walnut St., Cincinnati, Ohio.

### SUPPLIES

**Lower Price. Top Quality. Atwater's Honey.**

**FOR SALE**—New Standard Hoffman frames, K. D. crates of 100; new Standard Root ten-frame reversible bottom-boards, K. D., crates of 25; also used ten-frame Standard Root hives, bodies, painted, no disease. Money-saving prices.  
Warner Apiaries, Asheville, N. C.

**FOR SALE**—White sweet clover seed in hull, \$1.25 peck, \$4.25 bushel.  
Stover Apiaries, Mayhew, Miss.

**FOR SALE**—100 cases new 60-lb. cans in second-hand cases, packed two to the case. Cases are sound, but have been used once, 60c per case.  
Dadant & Sons, Hamilton, Ill.

**FOR SALE**—We have recently transferred 50 colonies of bees from old-style American hives with 12x12 frames. The discarded hives are in good shape, well painted, and would be desirable to anyone having this size hives. We offer the empty hives at \$1.50 each, if all are taken in one lot. Write for further particulars.  
Dadant & Sons, Hamilton, Ill.

**FOR SALE**—3,000 combs-honey supers for 4x6 section, nailed and painted; run in clean yards; are practically as good as new. Also, 4,000 Airline shipping cases; also nailed, corrugated paper for same; also 40,000 grooved sections with full sheets of foundation for same. This is all A1 stuff and prices away down.  
L. A. Coblenz, Rigby, Idaho.

**ROOT'S GOODS** at Root's prices.  
A. W. Yates, Hartford, Conn.

**FOR SALE**—To reduce stock, crates of 96 1 gallon cans, with bails and 3-inch screw caps, at \$17.50 per crate, f. o. b. Grand Rapids.  
A. G. Woodman Co., Grand Rapids, Mich.

**FOR SALE**—One-pound jars in two doz. cases, ten cases or more at \$1.75 per case, f. o. b. factory.  
A. G. Woodman Co., Grand Rapids, Mich.

**FOR SALE**—Good second-hand double-deck comb honey shipping cases for 4 1/4 x 4 1/4 x 1 1/4 sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.  
C. H. W. Weber & Co.,  
2146 Central Ave., Cincinnati, O.

**FOR SALE**—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case, f. o. b. Cincinnati. Terms cash with order.  
C. H. W. Weber & Co.,  
2146 Central Ave., Cincinnati, O.

**SEND** us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.  
H. S. Doby & Son, St. Anne, Ill.

### WANTED

**Lower Price. Top Quality. Atwater's Honey.**

**WANTED**—Old bee magazines. We have several customers who wish to complete their files of American Bee Journal and other magazines relating to beekeeping. The early volumes are especially desired. State what you have and price wanted in first letter.  
American Bee Journal, Hamilton, Ill.

**WANTED**—Second-hand 10-frame empty hives. Will pay cash.  
Dr. R. B. Smith, Villisca, Iowa.

**WANTED**—Second-hand hives, standard 10-frames.  
Geo. Harris, Dundas, Minn.

**WANTED**—Second-hand 10-frame comb-honey supers, complete, 4x6 plain sections preferred. Must be good and clean and within 400 miles of Sioux City.  
M. G. Beals, Oto, Iowa.

**WANTED**—Bees in straight-combed Standard L-framed hives.  
Amos Burhans, Waterloo, Iowa.

**WANTED**—200 or less colonies of bees for spring delivery. Any style-hive or box. Remembering 10c honey is in sight for 1921.  
A. W. Smith, Birmingham, Mich.

**FOR SALE**—Fifty 10-frame beehives with metal covers.  
Thos. Cordner, R. 7, Sparta, Wis.

**WANTED**—Extractor. Will pay cash. Langstroth frames 5c.  
Lorenzo Clark, Winona, Minn.

**WANTED**—10 or 12 inch foundation mill. State condition and price.  
Elbert Armentrout, Irving, Ill.

**WANTED**—A good honey location and bee outfit.  
Delbert Lhommedieu, Colo, Iowa.

**WANTED**—Bees, with or without location.  
F. W. Pease,  
1717 Blake Boulevard, Cedar Rapids, Ia.

**WANTED**—Beeswax, old combs and cappings for rendering on shares. Also wax accepted for trade. Top market prices offered.  
A. I. Root Co., Council Bluffs, Iowa.

**WANTED**—Beeswax. At present we pay 36c per pound in cash and 38c in trade for clean, yellow wax, delivered Denver.  
The Colorado Honey Producers' Association,  
Denver, Colo.

**WANTED**—Your order for "Superior" Foundation. Prompt shipments at right prices.  
Superior Honey Co., Ogden, Utah.

### SITUATIONS

**Lower Price. Top Quality. Atwater's Honey.**

**WANTED**—Position by single man experienced in bee-culture. Prefer queen-rearing and pound package business.  
S., care The American Bee Journal.

**WANTED**—Two young men, able-bodied, willing to work, clean in body and mind, who want to learn beekeeping and are willing to exchange faithful services for instruction from a man with almost forty years of extensive experience in beekeeping, board and some financial remuneration. Have twelve apiaries.  
R. F. Holtermann, Brantford, Ont., Canada.

**WANTED**—Alsacian lady who can furnish good references and speaks English, French and German, wishes to spend a season working at beekeeping. K., care American Bee Journal.

**WANTED**—Man with some experience to work with bees coming season. State age, experience and wages wanted, based on our furnishing board.  
The Rocky Mountain Bee Co.,  
Box 1319, Billings, Mont.

**WANTED**—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, reference and wages wanted.  
W. A. Latshaw Co., Clarion, Mich.

**WANTED**—A live young man to help me during season of 1921.  
Allen Latham, Norwichtown, Conn.

**WANTED**—A queen breeder for the coming season, to rear commercial queens. Address,  
M. S. Nordan, Mathews, Ala.

**WANTED**—One or two good queen-rearing men to begin work February 15, 1921.  
Nueces County Apiaries, Calallen, Texas.

**WANTED**—Two comb-honey men for season of 1921. Give experience, age, and wages expected.  
B. F. Smith, Jr., Fromberg, Mont.

**WANTED**—Will give experience and fair wage to active young man not afraid of work, for help in large, well-equipped set of apiaries for season starting April. State present occupation, weight, height, age and beekeeping experience, if any.  
Morley Pettit, The Pettit Apiaries,  
Georgetown, Ont.

### FOR SALE

**Lower Price. Top Quality. Atwater's Honey.**

**FOR SALE**—Southern amber honey, f. o. b., 30 and 35 gallon barrels, 12 1/2c per lb.  
G. F. Tucker, Blountstown, Fla.

**FOR SALE**—Fifty colonies of bees in old style Dadant double-walled hives in excellent condition; located in eastern Iowa. If interested, write. E. J. B., care American Bee Journal, Hamilton, Ill.

**FOR SALE**—Biennial white and yellow sweet clover seed, \$6.50 per bushel in bushel lots and over. Send for samples.  
N. H. Barnett, Howard, Kans.,  
Rt. 1, Box 74.

**FOR SALE**—5 acres of fine land in good location. A honey house with cement floor, and 300 colonies of bees. Best location for bees in southwest Texas. Will sell by the first of March.  
Chas. Heim & Sons, Three Rivers, Tex.

**FOR SALE**—150 colonies in ten-frame hives, with 3 shallow extracting supers, in good shape, \$15 per colony.  
A. A. Lyons, Ft. Collins, Colo.

**FOR SALE**—14 apiaries, one or all. Fine climate, health and stone roads, American church and school. Last season's crop 44 tons.  
M. C. Engle, Herradura, Cuba.

**HOME**—9 acres fruit trees, raspberries, blackberries and pasture. Bees and poultry included. Excellent location and home markets. Good buildings.  
Eber Coate, Georgetown, Ill.

**FOR SALE**—100 cases second-hand cans, packed two to the case, at 60c per case.  
Dadant & Sons, Hamilton, Ill.

**FOR SALE**—30 Standard bodies, \$17; 4 Jumbo bodies, \$3; 10 Woodman double-wall Jumbo hives, \$35, new; 100 1 1/4 spaced Jumbo frames, K. D., \$5; 200 Hoffman frames, K. D., \$9; 2 shallow extracting bodies, \$1; 10 4 1/4 x 4 1/4 plain comb supers, complete, \$8, new; 1 Cowan reversible extractor, \$18; 20 queen excluders, \$6; 5 telescope covers, \$5; 14 bottoms, \$2; 1 Woodman section press and lamp, \$3; 25-lb. Dadant medium brood foundation for Hoffman frames, \$18; 15 lbs. Dadant medium brood foundation for Jumbo frames, \$10; 5 lbs. Dadant surplus foundation, \$4. All in good condition.  
D. H. Maumsl, Midland, Mich.

**FOR SALE**—Eighty 8-frame hives with tops and bottoms, Root and Wilder make, part of them painted; used but one season (no disease in yards). Price \$2 per hive, or \$150 for the lot.  
A. R. Irish, Doctortown, Ga.

**FOR SALE**—"Superior" Foundation (Weed process). Quality and service unexcelled.  
Superior Honey Co., Ogden, Utah.

**FOR SALE**—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.  
A. E. Burdick, Sunnyside, Wash.

### MISCELLANEOUS

**Lower Price. Top Quality. Atwater's Honey.**

**THE DOMESTIC BEEKEEPER**, becoming known as "the liveliest bee journal published," reaches every interest, contains good articles, timely information, all the news worth printing. Monthly, \$1.50 per year. Sample copy free.  
The Domestic Beekeeper, Lansing, Mich.

**GRANULATED HONEY SLIPS**—100, 30c.  
Dr. Conney, Buck Grove, Iowa.

**DR. MILLER'S BEE SONGS** are in "Songs of Beedom." Ten songs for 20 cents, postpaid; 2-cent stamps taken. Also Teddy Bear souvenir postal cards, 10 for 10 cents. Address Geo. W. York, Box 84, Spokane, Wash.

## HONEY BROOK FARM

TWO AND THREE POUND PACKAGES ITALIAN BEES  
ALSO THREE-BANDED ITALIAN QUEENS



Delivered to you by parcel post.

My bees are untiring workers—gentle, prolific, properly priced. Pure mating absolutely guaranteed.

Ready for shipping April 10. To be in line, let me book your order now. Only 10 per cent cash required with order, balance just before you desire shipment.

No package bees sent without a queen.

Prices: Two-pound package, including untested queen ---\$6.50  
Three-pound package, including untested queen --- 9.00  
Twelve or more packages, 25c per package less.

Queens: Untested, \$1.50 each or \$15 per dozen. Tested, \$2 each, straight..

I will pay all the postage on package bees and queens. Empty cages to remain my property, and to be returned at my expense.

**JASPER KNIGHT, Prop., Hayneville, Ala.**

Prompt Service, Safe Arrival and Satisfaction  
Guaranteed

## FOR SALE

### IF YOU WANT THE CHEAPEST, BUY THE BEST

I am prepared to furnish for the season of 1921 twenty-five hundred two and three frame nuclei of my bright 3-banded Italian bees, headed with young, vigorous queens. These bees are free from disease, and safe arrival guaranteed. Hoffman frames wired and on full sheets of foundation; very few combs over two years old. I am booking orders now. One-fourth or one-half cash with order, balance before shipping.

Two-frame, \$4.25; three-frame, \$5.25. If queens are wanted, add \$1.25 each.

After May 5th I will be ready to mail queens at the following prices: Untested, single \$1.50, six for \$8, twelve for \$15. Tested, \$2.50 each. Select tested, \$3.50 each. Write for prices for large lots.

**A. B. MARCHANT, Jesup, Ga.**

Reference: Merchants and Farmers Bank of Jesup.

## HONEY CANS

Let us figure with you on your requirements of Honey Cans.  
We ship any quantity desired.

WRITE FOR PRICE LIST

**VIRGINIA CAN COMPANY, Roanoke, Va.**

BOX 577-D

SHE-SUITS-ME queen-bees, prices for 1921: Untested Italians, \$2 each; \$1.75 each for 10 or more, prior to June 15. After June 15, 1 to 9 queens \$1.50 each, 10 to 24 \$1.40 each, 25 and up \$1.25 each.

ALLEN LATHAM,  
Norwichtown, Conn.

## BEST GOLDEN ITALIANS

**BEN G. DAVIS, SPRING, HILL  
TENN.**

## PAINT WITHOUT OIL

Remarkable Discovery that Cuts Down  
the Cost of Paint 75%

A Free Trial Package is Mailed to Everyone  
Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., discovered a process of making a new kind of paint without the use of oil. He named it Powdripaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to A. L. Rice, Inc., Manufacturers, 23 North St., Adams, N. Y., and a free trial package will be mailed to you, also color card and full information, showing you how you can save a good many dollars. Write today.

## Florida Queens and Bees

Two-frame nuclei with queen, \$6 each. Tested queens, \$2 each. Selected tested, \$3 each.

This golden and three-band Italian stock I am offering has predominated and reproduced itself in the Sand Ridge section of Central Florida for 30 years.

### DIXIE BEEKEEPER

A 32-page monthly publication now two years old, devoted to beekeeping and its possibilities, as well as the general interest of beekeepers here in Dixie, \$1 per year. Sample free.

**WILDER'S CYPRESS HIVES** are durable and satisfactory. A full line of beekeeper's supplies at low prices.

Write for catalog.

**J. J. WILDER, Waycross, Ga.**



PAT JULY 30, 1918

### C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE \$7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO  
1415 South West Street, Rockford, Illinois

## Illinois Beekeepers

Become a member of the State Association. If you pay the dues of \$1.75 you become a member, get a year's subscription to your choice of bee journal and cloth-bound copy of the annual report issued every fall.

**G. M. WITHROW, Secy.**  
Mechanicsburg, Ill.

A NEW BEE BOOK  
"Dadant's System of Beekeeping"  
Price \$1.00.



# BEE SUPPLIES

We are prepared to give you value for your money. Our factory is well equipped with the best machinery to manufacture the very A-best supplies that money can buy. Only the choicest material suitable for bee hives is used. Our workmanship is the very best. Get our prices and save money.

## Eggers Bee Supply Mfg. Co.

Incorporated

ROUTE 1, EAU CLAIRE, WIS.

## DOWN IN COST TINS AND GLASS JARS

ORDER NOW FOR NEXT CROP PACKING

NOTE: LOW PRICES SUBJECT TO CHANGE AT ANY DATE

Following tins f. o. b. Baltimore factory. For New York shipment add 15 per cent extra:

- 2½-lb. cans, 2 doz. reshipping cases, \$1.45 per case net.
  - " in 100-can crates, \$6.50 per crate net.
  - " in 200-can crates, \$11.00 per crate net.
  - " in 500-can crates, \$24.50 per crate net
- 5-lb Pails with Handles—1 doz. reshipping cases, \$1.35 per case net.
  - In crates of 100, \$8.30 per crate net.
  - In crates of 200, \$16.35 per crate net.
- 10-lb. Pails with Handles—In ½-doz. cases, \$1.10 per case net.
  - In crates of 50, \$6.70 per crate net.
  - In crates of 100, \$12.75 per crate net.
- 5-gal tins, used, good condition, 2 to case, 50c per case
- 5-gal. tins, new, 2 tins to wood case, \$1.35 per case.

### White Flint Glass, with gold lacqd. wax-lined caps

F. O. B. Wheeling, W. Va., factory, or add 15 per cent for New York delivery:  
 8-oz. honey capacity, cylinder style, \$1.50 carton of 3 doz.  
 15-oz. honey capacity, table jar style, \$1.40 carton of 2 doz.  
 Quart or 3-lb. honey capacity, Mason style, \$1.00 carton of 1 doz.

**HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.**

## HONEY PRODUCERS TAKE NOTICE

Do you realize that it is only a short time until your bees will be taken out of winter quarters? Have you thought about supplies for next season? Do not wait until swarming time for that means dollars out of your pocket. Order your supplies NOW.

We manufacture and carry in stock a complete line of bee supplies ready for prompt shipment. Send us a list of supplies you will need and we will be pleased to quote you our price. Our 1921 descriptive catalog and price list is now ready for mailing; send us your name and address and we will mail you our catalog.

**AUGUST LOTZ COMPANY, Boyd, Wisconsin**

## PORTER

**BEE  
ESCAPE  
SAVES  
HONEY  
TIME  
MONEY**



For sale by all dealers.

If no dealer, write factory

**R. & E. C. PORTER, MFRS.**  
 Lewistown, Illinois, U. S. A.

(Please mention Am. Bee Journal when writing)

## HONEY

If interested in either extracted or comb write for our prices before buying. They are right.

**C. C. CLEMONS CO.**

DEPT. A

KANSAS CITY, MO.

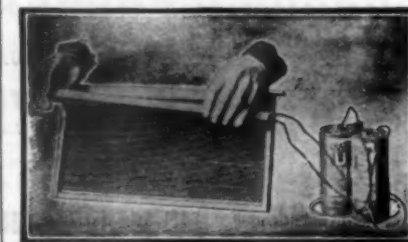
## BARNES' FOOTPOWER MACHINERY

Read what J. E. Parent, of Chariton, N. Y. says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."



**W. F. & JOHN BARNES**  
 995 Ruby St., ROCKFORD, ILLINOIS



## ELECTRIC IMBEDDER

Price without Batteries \$1.50  
 Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all bee supply dealers

**Dadant & Sons, Manufacturers**  
 HAMILTON, ILL.

## BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

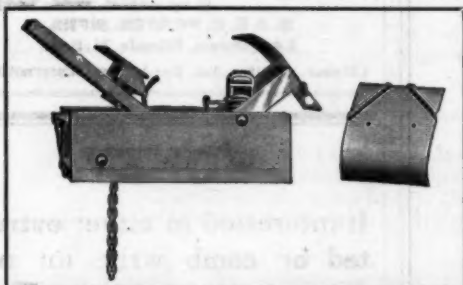
Send Us Your Inquiries  
**A. H. RUSCH & SON CO.**  
 Reedsville, Wis.

## Early Orders Bring Savings

**N**ATURALLY we want your order for bee supplies now, when we can give it better attention. Spring will soon be

here, with its usual rush for supplies. So we offer an early-order discount to beekeepers who buy now.

Write today for our red catalog.



We are exclusive manufacturers of the

### Dewey Foundation Fastener

Many exacting beemen claim it is the best machine yet devised. Overcomes objections common to all others. Include the Dewey in your order.

**W. T. FALCONER MFG. CO., Falconer (near Jamestown) N. Y., U. S. A.**

*"Where the Best Bee Hives Come From"*

## BEE SUPPLIES

### ROOT'S GOODS AT FACTORY PRICES WITH WEBER'S SERVICE

We carry several carloads of bee supplies, and are able to give prompt shipment at all times. Our motto is a customer must be satisfied. Give us a trial and we will show you how quickly we will answer your correspondence. Send your order and it will follow 24 hours after we receive it. Our new catalog will be ready about January 15; send for same. We have thousands of satisfied customers, why not you? Send a list of your wants and we will quote you.

**C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.**

### BOYER'S "QUALITY-FIRST"

## TIN HONEY and SYRUP CONTAINERS

are the best and cheapest in the long run  
Prompt shipments of all standard sizes and styles

**CAN MANUFACTURERS SINCE 1892**  
LARGE CAPACITY

If you cannot secure them from your usual supply house, write us your needs

**BALTIMORE, MD. W. W. BOYER CO., Inc. 2327-2359 Boston St.**

Good stock, plus long experience in shipping bees make it profitable to buy package bees or nuclei.

*Write for my new circular*

**R. V. STEARNS**  
BRADY, TEXAS

### BEEKEEPERS WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

**MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.**

### STRAWBERRY PLANTS

Good, strong, well rooted plants as low as \$4 and \$5 per thousand. Also a complete line of the best red and black raspberries, hardy blackberries, fancy gooseberries and currants; a large stock of popular grape vines. Many of our customers are making from \$500 to \$1,200 per acre growing berries from our fruit plants. Send for our free catalog.

**BRIDGMAN NURSERY CO.,**  
Box 13, Bridgman, Mich.



# Crop and Market Report

Compiled by M. G. Dadant

Indications were when the last report was written, that by the time February arrived there would be a change in the market conditions, so that honey would be moving more freely. Unfortunately, this has not been the case, and many beekeepers are still with considerable stocks of honey on their hands. This applies, of course, to the larger producers who were not able to sell their honey through local channels. Practically all of the smaller beekeepers have disposed of their entire stocks, and, of course, many of the large beekeepers have also. The condition is better than it was a month ago, although it has not moved with any great speed.

With reference to honey prices, these are lower than they were a month ago, with no indication of any rise in price, since sugar also has maintained a very low level. The only redeeming factor is that foreign exchange has risen considerably and there should be a larger market for honey in the foreign field before long.

We have seen an offer of Chilean honey put up in five-pound cans at 16c per pound, or 80 cents for five-pound cans. This is indeed very low. The quotations of one California commission merchant are as follows: fancy white sage honey, 15c; fancy white orange honey, 16c; choice light amber sage honey, 13c; fancy white sweet clover honey, 11c.

They also quote some special trade in a few cars of honey which they wish to move promptly and which are as follows: Fancy light amber alfalfa honey 8c, Hawaiian honeydew 5c. All of these are f. o. b. common shipping points California.

The reader will note from these that the honey price

has dropped very materially, and my private opinion would be that right now is hardly the best time to sell, since the above prices very likely reflect the quotations as made by beekeepers who are forced to move their honey and are willing to sacrifice the same at a considerable reduction. The large co-operative associations are not in line with the offers quoted above and are holding considerably higher.

Comb honey has moved very well and there will be little of this left after the first of March.

Naturally, we are going through very peculiar times at present and it is difficult to say what the honey market will do. It hardly seems plausible, however, that prices should remain at the present low ebb unless all other produce does.

There has been decided improvement in the prices of grain and some other farm products and evidently honey will follow in turn.

No doubt that a great deal of the unfavorableness in the honey situation is due to the low price of sugar and the fact that many manufacturers are returning to sugar in their products instead of using honey as was done during war times. However, probably the main reason for the surplus of honey is the fact that our exports are so very low.

We understand that there is under consideration an increased duty on honey which would tend to raise the price of foreign honey entering these markets. However, the United States is ordinarily a honey exporting country rather than a honey importing, and these will only have a temporary influence.

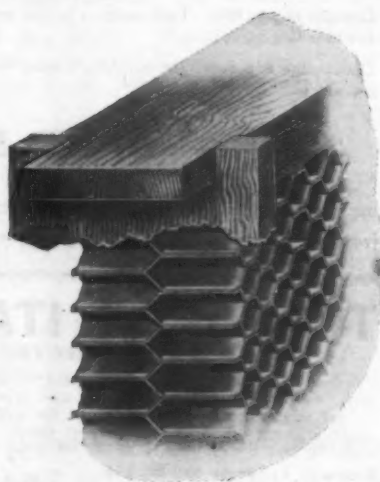
## AT LAST MR. BEEKEEPER MAC DONALD ALUMINUM HONEYCOMBS

YOU MAY ORDER  
FROM 1 to 10,000

AND KNOW THAT YOU WILL RECEIVE THEM ON TIME

The New Brood  
Rearing  
Aluminum Comb

55c f. o. b. Pasadena



Hoffman, 60c f. o. b.  
Pasadena

Langstroth, 60c f. o. b.  
Pasadena

Jumbo, 70c f. o. b.  
Pasadena

Shallow, 50c f. o. b.  
Pasadena

Prompt and Safe Delivery Guaranteed

DUFFY-DIEHL, Inc., 17-19 South Chester Street, Pasadena, Cal.

## AIRCO MILLS TURNING

And we are making that famous product, the New Process Root-Weed Foundation on our own machines, here at Council Bluffs. Let us send you a sample, for we believe it is absolutely the last word in foundation. And you'll want to give it a trial in your own apiaries. We are willing to abide entirely, the results of severest test.

We must have, of course, large amounts of beeswax to keep up with the demand for Airco. We will be glad to quote on all you hold, and we believe that our schedule of price, credit, or of working wax into foundation will interest you. And our quotation on your total foundation needs for 1921 will interest you also.

*Use Airco--It Pays*

**THE A. I. ROOT CO.**  
OF IOWA  
COUNCIL BLUFFS, IA.

## FOREHAND'S THREE BANDS

THE THRIFTY KIND

The year of 1921 brings us to the 29th year of our experience in rearing queens for the market. It will bring our queens up to a higher standard, one that is still surpassed by none, but superior to many.

WRITE FOR CIRCULAR

**W. J. FOREHAND & SONS**  
FT. DEPOSIT, ALA.

## TENNESSEE-BRED QUEENS

Forty-nine Years' Experience in Queen-Rearing  
Breed Three-Band Italians Only

	Nov. 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12
Untested Queens.....	\$2.50	\$12.00	\$22.00	\$2.00	\$10.00	\$18.00
Select Untested.....	2.75	13.50	24.00	2.25	12.00	20.00
Tested.....	3.50	20.00	35.00	3.00	16.00	30.00
Select Tested.....	4.00	22.50	40.00	3.50	18.50	35.00

Select tested, for breeding \$7.50

The very best queen tested for breeding \$15

Capacity of yard 6000. I sell no bees by the pound or nuclei except with high priced tested and breeding queens

Queens for export will be carefully packed in long distance cages, but safe delivery is not guaranteed

**JOHN M. DAVIS, Spring Hill, Tenn.**

## THAGARD'S ITALIAN QUEENS

BREE FOR QUALITY

After years of breeding from some of the best three-banded stock imported from Italy, we have brightened the color and retained the good qualities of their mothers. I do not breed for quantity, but breed for quality. My queens have proven this to thousands of beekeepers who have tried them. They are hardy, prolific, gentle, disease-resisting and honey producers. Book your order early for spring delivery.

Untested, 1, \$2; 6, \$8; 12, \$15.

Tested, 1, \$3; 6, \$10; 12, \$25.

Select untested, 1, \$2.25; 6, \$10; 12, \$18.

Select tested, 1, \$5; 6, \$25; 12, \$50.

We have ready to ship, one carload of bees in 8 and 10-frame Root hives, Hoffman frames, wired with comb drawn from full sheets of foundation. Write for prices in lots from 10 to 100.

Safe arrival, pure mating, and perfect satisfaction guaranteed. Circular free.

**V. R. THAGARD, Greenville, Ala.**





## CYPRESS by TEST Substitutes by TALK



The PROOF?—Two Letters FROM BEEMEN:

"Our correspondent makes serious complaints against \_\_\_\_\_ and MAKES A PLEA FOR CYPRESS as a BEEHIVE MATERIAL. We hope you will look into this matter," (Etc.)—and here's another:

"Mr. \_\_\_\_\_, of \_\_\_\_\_, just came into the office. He informs us that they tried a car of CYPRESS LUMBER last year for the first time, and are so well pleased with it that they are ORDERING ANOTHER CAR for use in making HIVE BOTTOMS."

Is there value to you in an endurance test of 51 years in greenhouse sash? It is reported to us that sash made of heart Cypress by a prominent greenhouse contractor in Chicago, and placed in position in a greenhouse at Des Plaines, Ill., in 1868, are Still Doing Service.

It will serve you as well and save you the nuisance and expense of repairs and replacements.

The argument backed by such facts cannot be answered by mere talk. Ask the manufacturer or contractor who wants to give you a "substitute" for Cypress to cite you an endurance test of 30 to 45 years to the credit of the so-called "substitute."

That is no more than a fair precaution on your part—good, ordinary business sense.

Write us for Vol. 1 of the Famous Cypress Pocket Library with Full U. S. Government Report on "The Wood Eternal"

## SOUTHERN CYPRESS MFRS.' ASSOCIATION

1251 PERDIDO BUILDING, JACKSONVILLE, FLA.

1251 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.

FOR QUICK SERVICE, ADDRESS NEAREST OFFICE

## ALUMINUM HONEY COMBS

### PRICE LIST

Standard Langstroth (Hoffman brood-frame) size, each	60c	Prices are f. o. b. San Antonio, Texas.	
Shallow Extracting (5¾ in. deep) size, each	50c	Parcel Post weight, 1 comb	2 lbs.
Modified Dadant (Jumbo depth) size, each	70c	Parcel Post weight, 10 combs	11 lbs.
		Parcel Post weight, 20 combs	20 lbs.

We receive hundreds of letters about this valuable beekeeping appliance, of which this is a fair sample:

Texas Honey Producers' Association,

1105 S. Flores Street, San Antonio, Texas.

Hiram, Ohio, January 3, 1921.

Dear Sirs: I purchased a set of the Aluminum Honeycombs—of the Company in California—last year, in time for a test this last season, and am so well pleased that I am anxious for more. I divided the set between two strong colonies, one set in brood-chamber and balance in extracting supers. In the brood-chamber every comb was filled with brood—both sides, as nice a set of 5 brood-combs as I ever saw. The 5 in extracting super were filled twice with clover and extracted and once on fall honey. The frames averaged 8 lbs. net. The colonies that made the extracted honey gave me 440 lbs. of surplus honey, the largest yield I ever secured from a single colony, and I lay it to the Aluminum Honeycombs, and I am glad to know I can get more. Please send me price list and circulars.

Respectfully,

H. M. LEACH.

Write for our new catalog containing full description and prices on

LEWIS BEEWARE, DADANT FOUNDATION, ALUMINUM HONEY COMBS

## TEXAS HONEY PRODUCERS ASSOCIATION

1105 S. Flores St.

P. O. Box 1048

San Antonio, Texas

E. G. LE STOURGEON, Mgr.

# BEE SUPPLY PRICES

We are here going to make an absolutely frank statement about bee-supply prices, for we know that many beekeepers feel that the present prices are not warranted. They are under the impression that prices of the material we use in manufacturing bee supplies have fallen greatly, and that a drop in bee-supply prices is due. We wish this were true; but, unfortunately, it isn't true.

For more than a year, during all the time when prices of materials used in our manufacturing were mounting higher and higher, we refrained from advancing our prices. We hung to the old prices, hoping every day that the turn downward in material prices would come. But this turn didn't come. The result was that we found ourselves manufacturing much the largest part of our bee supplies at an actual loss. We couldn't continue this, and on July 1, last, we made the advance to present prices. Some commodities in general public use had begun to fall by that time. So it seemed to many that our price advance came when the turn downward in all prices was at hand. But the fact is that the prices of material we had to have in our manufacturing of bee supplies did not turn downward. These prices were still holding level, or going up. Clothing prices could go down because wool and cotton took a tremendous drop. We don't use wool and cotton in our manufacture. We do use high grade lumber and metals—and these didn't go down.

Only today, January 7, 1921, the best quotations we can get on the grade of white pine lumber we require for manufacturing our hives and hive parts, is exactly the same quotation that was made us on April 1, 1920—and we cannot get a lower quotation. **Lumber comprises fully 75 per cent of our product.**

## SOME PLAIN FIGURES

We ask every fair-minded beekeeper to study the following table a moment. This table takes as a basis of comparison \$100 worth of raw material in 1913, and shows what the same \$100 worth of raw material cost us in 1920, and the per cent of increase. It also takes \$100 worth of our goods in 1913, and shows what this same \$100 worth of goods costs the beekeeper in 1921, and the per cent of increase. Note how very much less the increase of our prices than the increase of the raw material (and our labor cost has increased 70 per cent since 1913, also).

### PRICES OF RAW MATERIALS

	1913 Costs.	1920 Costs.	Per Cent Increase.
Pine	\$100	\$273.33 to \$333.00	173% to 233%
Basswood	100	419.00 to 451.00	319% to 351%
Cypress	100	273.52 to 302.00	173% to 202%

### PRICES ON ROOT'S GOODS

	1913	1920	1921	Per cent Increase	1921
\$100 worth of hives		\$164.32	\$253.81	64%	154%
\$100 worth of sections		226.08	382.60	126%	282%
\$100 worth of foundation		141.70	157.49	41%	57%

You can learn from this table that lumber prices as quoted in 1920, can fall more than 100% of the price of 1913, and yet show a greater increase of cost than the increase of the present prices of bee supplies.

Railroad freight rates have so greatly increased that our freight bills amounted to \$75,000 more in 1920 than the same amount of freight from and to the same points would have cost us in 1913.

We would have been justified in advancing to our present prices a year earlier than we did, as most manufacturers in all lines did do. Had we done so then, our beekeeping friends would have expected it—but they would not have got one year's supplies, much of which they bought at a figure below the manufacturer's cost.

## THE SITUATION TODAY

Prices of lumber of the grade we mostly use are not lower today than the average price of the same grade of lumber during 1920. Large lumber operators tell us this price is up to stay up, because of scarcity. This is the big item in our manufacture. The price we pay for labor is still the highest figure. The price of metals is somewhat lower, but that price is still higher than the advance provided for in our catalog prices.

With these price facts placed squarely before our beekeeping friends, we say to them that our prices are warranted and necessary. Another season we expect they may be lowered. But we do not hope that we can lower them during the beekeeping season of 1921. We wish we could.

**THE A. I. ROOT COMPANY, Medina, O.**